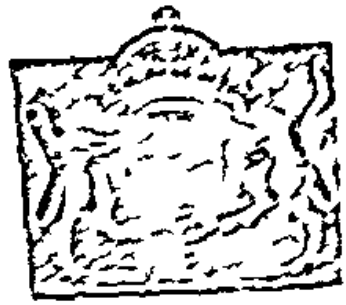
MGS—F/66.



FIELD SERVICE POCKET BOOK

[illegible]

1955

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G R F TOTTENHAM,
Secretary to the Government of I

SIMLA,

NOTES

1. THIS BOOK IS INTENDED TO BE A HANDY AND CONCISE REFERENCE FOR THE USE OF OFFICERS ON ACTIVE SERVICE AND AT MANŒUVRES AND ON INSTRUCTIONAL EXERCISES IN CONNECTION WITH OPERATIONS

2 IT IS BASED ON THE OFFICIAL TRAINING MANUALS AND OTHER PUBLICATIONS, BUT WILL NOT BE QUOTED AS AN AUTHORITY IN OFFICIAL CORRESPONDENCE EXCEPT AS REGARDS APPENDIX I, ABBREVIATIONS, ETC

3 THE BOOK IS NOT TO BE UTILIZED AS A TEXT BOOK FOR THE STUDY OF MILITARY SUBJECTS

4 OFFICERS ARE EXPECTED TO KEEP THIS BOOK UP TO DATE IN ACCORDANCE WITH ANY CHANGES WHICH MAY APPEAR IN ARMY ORDERS AND OTHER OFFICIAL PUBLICATIONS

India.

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DEFINITIONS.

(For special definitions of terms used in Combined Operations, *see* p xiv)

ACCOUTREMENTS comprise belts, pouches, bandoliers, slings, packs, mess tins haversacks water bottles and similar articles (other than arms) carried outside the clothing

ADMINISTRATION That function of command which deals with the maintenance of the forces in the field divided into —

i. *General administration* —Controlled by the headquarters of the forces in the field.

ii. *Local administration.*—Controlled by the local commander

ADVANCED BASE A locality in which are situated the advanced depots of ammunition supplies animals and materials

ALIGNMENT Any straight line on which a body of troops is formed or is to form

[illegible]

local administration.

ARM. A branch of the army whose primary duty is to fight

BASE A sub area organized to include two or more depots of men, animals or material.

BASIN [illegible]

BAY [illegible]

BEAR [illegible]

East and South.

BENCH MARK A mark cut by surveyors on a stone or permanent structure to indicate that a level has been accurately fixed by instruments

BERM. The distance between the edge of an excavation and the parapet formed of the excavated earth in a defence work.

BIGHT The portion of a rope used double when the ends are not available

BIVOUAC An encampment without tents or huts

CALIBRE The diameter of the bore of a gun in inches, excluding the depth of the grooves

CAMOUFLAGE An artificial means employed to deceive the enemy's visual or photographic observation from the ground or from the air

COL. A depression between two adjacent hills; a break in a ridge; the neck of land connecting an outlying feature with the main range.

COLUMN Bodies of troops formed one in rear of another

COMMUNICATIONS Roads railways inland waterways, air routes or any other facility in a theatre of operations suitable as a route for the movement of men, animals or material.

CONTOUR A contour is the representation on a map of an imaginary line running along the surface of the ground at the same height above sea level throughout its length.

COVERING FIRE Fire by one unit or arm to engage the enemy's and force him to seek cover in order that another unit or arm may or retire

COVERING TROOPS Troops located on the North West Frontier of India where their role is three fold —

(a) To protect the administered districts from tribal incursions.

(b) To deal with local unrest or disturbances.

(c) To form a screen behind which the Field Army can concentrate according to preconcerted plans.

CREST (TOPO) The edge of the top of a hill or mountain, the position at which a gentle slope changes to an abrupt one also the highest point of a parapet.

[illegible] a narrow [illegible]

DEPOT An installation in which personnel animals or material are held.

DEPTH The space occupied by a body of troops from front to rear

DERRICK A single spar held by four guys used for lifting or moving weights.

DISTANCE The space between men or bodies of troops from front to rear

DUMP A collection of material accumulated temporarily for some special purpose

ECHELON A formation of successive and parallel units facing in the same direction each on a flank and to the rear of the unit in front of it.

ENFILADE FIRE Fire which rakes the greatest length of a position or body of troops

FIELD ARMY That portion of the army in India available for operations trans frontier

FIELD OF FIRE The area of ground which any unit or weapon can sweep with fire

FIGHTING TROOPS Cavalry artillery engineers signals infantry and tank corps and any air force contingent co-operating

FILE. A front rank man and his rear rank man

FIRE DIRECT LAYING When the gun is laid by looking over or through the sights at the target

FIRE, FRONTAL Fire the line of which is perpendicular to the front of the target.

FIRE HIGH ANGLE Fire from all guns and howitzers at all angles of elevation exceeding 25°

FIRE [illegible]

FIRE [illegible]

FIRE [illegible]

FORC [illegible]

FOR [illegible]

I The corps

II. The army

FRO [illegible]

GORC [illegible]

GRA [illegible]

GUY [illegible]

GYN A tripod with tackle used for raising weights

HEADQUARTERS. A unit or part of a unit upon the establishment of which is borne the commander his staff and assistants of all ranks escort animals and transport.

HEAD OF SERVICE. The senior officer of a service in the theatre of operations

HORIZONTAL EQUIVALENT The distance in plan between two adjacent contours *generally measured in yards*

HORSE LENGTH. 8 feet

HORSE WIDTH 3 feet, which includes 3 inches outside the rider's knee on either side

IMPREST An advance of public money for expenditure on the public service *e.g.* payment of troops local purchases etc

INSTALLATION A locality organized for the specific purpose of a service.

INTERCOMMUNICATION The means of transmission of all orders and information by which the close co-operation of all forces in the field is ensured. The means include the service provided by the Royal Corps of Signals by regimental signalers and orderlies, by liaison officers and by the postal service.

INTERNAL SECURITY TROOPS Troops whose role is the maintenance of law and order within India and so permit the process of mobilization to proceed without interruption

INTERVAL The lateral space between men units or corps measured from flank to flank.

KNOLL A broad detached hill.

LINE(S) OF COMMUNICATION The system of communications in a theatre of operations between the bases inclusive and the rear limit of administration by formation commanders along which the requirements of the field army are transported

L. OF C UNITS Units allotted to the L. of C

MAINTENANCE The process of keeping the forces in the field complete in personnel animals and material

MEETING POINT A place at which third or second line transport is met by guides and directed to delivery points.

MOBILIZATION The process by which an armed force passes from a peace to a war footing The mobilization therefore of a unit means its completion for war in men horses and material.

ORDERLY A man detailed to carry messages

PACE The denomination of different degrees of speed also a measure of distance 30 in hes)

PARK A unit holding a collection of spare war material organised to facilitate rapid supply to troops

PATROL A small moving body of men less than a troop and usually consisting of a N C O and a few men used for reconnoitring protective and other purposes such as visiting sentries and connecting with other portions of our own troops

Standing Patrol. A party of from two men to a troop or even more posted a considerable distance in advance of other troops to watch either the enemy a route by which he might advance or a locality in which he might concentrate unseen.

PLATOON The quarter of an infantry company Consists of four sections

PLOTTING The process of laying down on paper all observations and measurements

POSITION IN OBSERVATION (artillery) implies batteries in action watching all ground in their field of fire and ready to open fire

POSITION IN READINESS (artillery) implies batteries limbered up under cover with all possible alternative positions in the immediate neighbou reconnoitred and everything ready for their occupation

RAIL [illegible]

REC [illegible]

RE-ENTRANT A valley or depression running into a main feature.

REFILLING POINT In the case of material other than ammunition the place where articles hitherto carried in bulk are reloaded in detail for units

In the case of ammunition the place where loads are transferred from third line to second line transport.

REGULATING STATION The point on the line(s) of communication at which a transporting agency is given further directions as to destinations of transport.

REINFORCEMENT CAMP A unit formed on mobilization at a place conveniently accessible to the theatre of operations for the purpose of holding drafts of reinforcements in immediate readiness for despatch to units in the field. These reinforcements are obtained —

(a) by drafts from depots or in the case of an overseas campaign from the country of origin.

(b) from personnel discharged as fit from hospitals and convalescent depots in the theatre of operations

RELIEF The length of time that men have to work before being relieved, or a number of men who work or are on duty for a given length of time

RENDEZVOUS A place at which third line transport is met by guides and directed to refilling points

REPORT CENTRE A prearranged position to which reports intended for a commander must be sent

REQUISITION A mode of making inhabitants of a district contribute supplies, etc to an army Must be paid for (*see* page 180) but a Requisition Receipt Note implies no promise to pay

SADDLE See COL

SANGAR A parapet composed of dry [illegible] stones [illegible]

SCALE [illegible]

SECT [illegible]

" Engineers The sub division of a company

" Infantry The sub-division of a platoon

Tanks [illegible]

SERV [illegible]

SHEE [illegible]

SPAN [illegible]

SPITLOCK. To mark out a line on the ground with the point [illegible]

SQUAD A small body of men formed for drill or for work

STAFF TEL. Staff officers appointed to the General Staff to the A G's Q M. G s and M. G O s branches of the staff or as brigade-majors and staff captains to assist certain commanders in the discharge of their duties.

STORES *Stores* are war material other than *supplies* and are classified as Ordnance Engineer Transportation, R. A S C., Medical and Veterinary and Stationery Stores

In India the following modifications are necessary :—

(i) I A S C stores Stores for tanks armoured cars tractors carriers and all other mechanically propelled vehicles together with spare parts and material and plant for the repair of the vehicles These do not include certain materials supplied by the Ordnance Service for the maintenance of mechanically propelled vehicles

(ii) SIGNAL stores In India the whole of the material required for permanent and semi permanent aerial lines is supplied by the Indian Posts and Telegraphs Department.

SUPPLIES Food forage petrol lubricants for mechanical transport vehicles, fuel, light disinfectants and medical comforts

TASK The amount of work to be executed by a man party or unit during a relief

THEATRE OF OPERATIONS The area within the command of a C in-C., as defined by His Majesty's Government

TRACE The outline of a work in plan.

TRANSPORT The term *transport* is used in a general sense (i) to denote driver animal vehicle and such equipment (*e g* harness) as may be necessary to render the vehicle mobile and (ii) to denote that portion of an organized unit formation or service of which the primary duty is the transportation of personnel, animals or material

Transport of formations and units is divided into :—

First line.—Unit transport

Second line.—Transport normally working between R Ps and D Ps

Third line —Transport normally working between railhead and R Ps

TROOP A sub-division of a squadron corresponding to a platoon in the infantry

UNIT [illegible]

Regiment of cavalry

Brigade of artillery

Battalion of infantry or tanks

For *statistical* purposes the term *Unit* means any formed body of personnel having an authorized war establishment The establishment need not be a fixed constant, but each component of it must be an authorized one

[illegible] belongs *i.e* to [illegible]

VERTICAL INTERVAL The difference of level between two adjacent contours usually expressed in feet.

WATERCOURSE The line defining the lowest part of a valley, whether occupied by a stream or not.

WATERSHED A ridge of high land separating two drainage basins; the summit of land from which water divides or flows in two directions It does not necessarily include the highest points of a range

X LIST is a list maintained for each corps on which all personnel of a corps in a theatre of operations are accounted for which are not serving with units of that corps.

DEFINITIONS OF TERMS FOR USE IN COMBINED OPERATIONS

ADVANCED BASE A base sufficiently close to the zone of operations to permit of supplies etc., being sent direct from it to that zone It may also be used for storing supplies, concentrating reinforcements and establishing hospitals rest camps etc

BEACH A beach is a portion of the coast on which a landing may take place The main consideration in deciding the length of a beach will be the convenience of control by a beach master

There may be any number of beaches in a sub-section.

COAST The ordinarily accepted meaning of the word *e g* the south coast of England

COAST SECTION A length of coast selected for reconnaissance will be divided, in the first place, in to coast sections clearly defined by distinctive features, *e g* beachy Head to Dungeness

COAST SUB SECTION Each coast section will be sub-divided into clearly

COVERING FOR [illegible]

COVE [illegible]

FIRST [illegible] landing craft making the first trip to the beaches

FLOATING RESERVE That portion of the [illegible]

FORMING UP PLACE A place of assembly for smaller units clear of but close to the landing place to which troops proceed immediately they have landed

TOW A number of boats or lighters secured to one another and towed by one steamboat or motor boat

TRIP The passage of a *tow* from a ship to a landing place (*See also* ROUND TRIP)

FIELD SERVICE POCKET BOOK

1935

CHAPTER I

ORGANIZATION

1 ESTABLISHMENT OF UNITS

1 Information regarding the war establishments of units in personnel and animals is given in the War Establishment and Field Service Manual of the unit

2. Details of war equipment of units, method of carriage and the authority for issue are shown in the following publications —

i Unit equipment in the War Equipment Table of the unit (I A F F 980—New Series)

ii Personal equipment in the War Equipment Table and Field Service Manual of the unit

iii Clothing and necessaries in Clothing Regulations India and the Field Service Manual of the unit.

iv Supplies forage and fuel in Mobilization Regulations the Field Service Manual of the unit and War Establishments

v Medical equipment in War Equipment Tables or Medical Mobilization Equipment Scales of the unit

vi Books forms and stationery in an appendix to the War Equipment Table of the unit (I A F F 980—New Series)

2 ORGANIZATION OF UNITS

The organization of units of fighting troops is as follows —

Arm. (1)	Units: Brigadier's Command (2)	Lieut. Col.'s Command (3)	Major's or Captain's Command (4)	Subaltern's Command (5)
Cavalry—	*Brigade—* Headquarters 1 Brit. Cav. Regt. 2 Ind. Cav. Regts. 1 Battery R. H. A. (*d*) 1 Fd. Tp. S. M. (*d*) 1 Cav. Bde. Sig. Tp. (*d*) 1 Cav. Fd. Amb. 1 Mob. Vet. Sec. 1 Pro. Tp. *Cav. Bde. I. A. S. C.—* 1 Supply Issue Sec. 2 Battery Secs. 1 M. T. Coy. (30 cwt. 6 wheeled)	*Regiments—* *Brit. Cav. Regt.—* Headquarter Wing (*e*). 3 Squadrons (*b*) *Ind. Cav. Regt.—* Headquarter Wing (*c*) 3 Squadrons (*b*)	*Squadron—* Headquarters 4 Troops (*e*)	*Troop* (*a*)— 3 Sections (1 Section with Detachment V. B.)
Artillery— *Horse*		*Nil* (*f*)	*Battery—* Headquarters 3 Sections	*Section—* 2 Pieces.
Field and Mountain	*Divisional Artillery—* Headquarters 2 Field Brigades 1 Mtn. Bde. 1 D. A. U.	*Brigade—* *Field Brigade—* Headquarters 4 Batteries (*g*).	*Battery—* Headquarters. 2 Sections.	*Section—* 2 pieces

	or Headquarters. 3 Field Brigades. 1 D A U	*Mtn. Bde* — Headquarters. 1 Light Battery 3 Mountain Batteries 1 B A C	*Battery*— Headquarters 2 Sections *D A U* — Headquarters 2 Sections	*Section*— 2 pieces
Medium		*Brigade* (*h*)— Headquarters. 3 Batteries	*Battery*— Headquarters 2 or 3 Sections	*Section*— 2 pieces
Heavy (Coast defences)	.	*Brigade*— Headquarters 2 or more Batteries	*Battery*— Headquarters 1 or more Sections	*Section*— 1 or more pieces
Anti aircraft.	.	And (*i*).	*Battery*— Headquarters 4 Sections	*Section*— 2 pieces
Engineers—	. .	*Divisional Engineers* (*j*)— Headquarters 1 Div H Q Coy 3 Fd Coys (*k*)	*Field Company*— Headquarters 4 Sections *Div H Q Coy* — Headquarters 2 Sections	*Section*— *Section*—
			Field Troop—	*Half Troop* (*l*)

(*a*) Troop in Ind Cav Regt commanded by I O
(*b*) 3 sabre squs
(*c*) V B Tp in H Q Wing
(*d*) See under respective arm
(*e*) 4 Sabre Tps
(*f*) No R H A Bdes in India
(*g*) 2 18-pr and 2 4 5" How Btys
(*h*) Army Troops
(*i*) No A. A. Bde in India.
(*j*) Commanded by Col or Lt Col
May also be non-divisional unit.
(*k*) Commanded by I. O.

Arm. (1)	Units			
	Brigadier's Command. (2)	Lieut Col s Command (3)	Major s or Captain s Command (4)	Subaltern's Command. (5)
Engineers—contd. Non divisional	. .		*Army Troops Coy* — Headquarters 2 Sections	*Section*—
	.		*Mobile E & M Coy* — Headquarters 2 Sections	*Section*—
			Stationery E & M Coy — *Artisan Works Coy* — Headquarters 3 Sections	*Section (l)*—
			Base Engineer Park Coy — Head quarters 1 Section	*Section (m)*—
			Army Engineer Park Coy - Headquarters 3 Sections	*Section (n)*—
		Road Construction Battalion— Headquarters. 4 Companies.	....	*Company (l)*—
			....	*Printing Section (o)*—

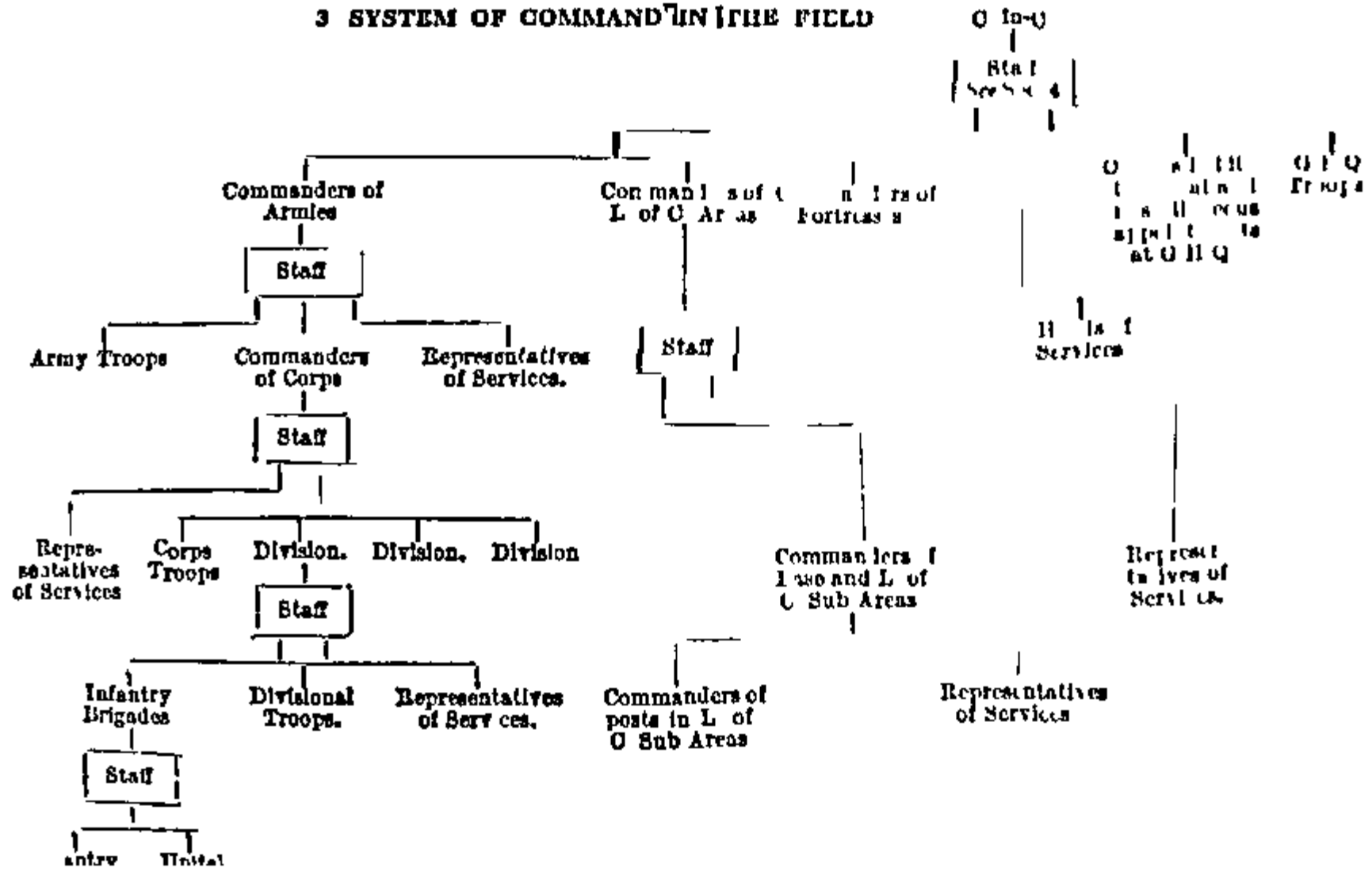
	....	*Survey H Q with an Army* (p)—	....	*Section* (q)
		..	*Indian Field Survey Company* (r)— Headquarters 5 Sections	*Section* (q)—
Signals—	....	*Corps Signals*— Headquarters 2 Companies	*Company*— Headquarters 5 or 6 Sections	*Section* (q)—
		Divisional Signals— Headquarters 2 Companies	*Company*— Headquarters 4 to 6 Sections	*Section* (q)—
		District Signals (s)— Headquarters Companies variable	*Company*— Headquarters Sections variable	*Section* (q)—
			L of C Signal Coy — Headquarters 7 Sections.	*Section* (q)—
	....	....	*Cavalry Brigade Signal Troop*— Headquarters 2 Sections.	*Section* (o)—

(l) Commanded by I O
( ) Commanded by a Captain
n) Commanded by a W O or Indian S D O
o) Commanded by British N C O
) Commanded by a Colonel
) Ranks of Commanders vary
) Commanded by Lt Col or Major.
Major's Command.

Arm (1)	Units			
	Brigadier's Command (2)	Lieut C I s Command (3)	Major s or Captain s Command (4)	Sub altern s Command (5)
Infantry—	*Brigade—* Headquarters 1 British Infantry Battalion 3 Indian Infantry Battalions	*Battalion—* Headquarters Headquarter Wing 4 Companies (*t*)	*Company—* Headquarters 4 Platoons	*Platoon* (*u*)—
Armoured Cars and Light Tanks—	....	*Commanders R T C —* Companies variable	*Armoured Car Company—* Headquarters 3 Sections *Light Tank Company—* Headquarters 3 Sections	*Section* (*v*)— 5 Armoured Cars. *Section* (*v*)— 7 Light Tanks

(*t*) 1 M G Coy and 3 rifle Coys M G Coy in British Inf consists of 3 Pls, in Ind Inf 2 Pls
(*u*) Commanded by I O in Indian Infantry Battalion
(*v*) Captain or Subaltern s Command

3 SYSTEM OF COMMAND IN THE FIELD



4. DUTIES OF THE BRANCHES OF THE STAFF AND MILITARY SECRETARY IN WAR.

THE GENERAL STAFF

1. The duties of the General Staff Branch in war include:—

i *Operations and Intelligence sections*—
(a) Preparation of plans and issue of orders for operations.

ii *Staff Duties section*—War organization
iii *Training section*—Military training of all troops

THE ADJUTANT-GENERAL'S BRANCH

[illegible]

[illegible] and other documents

THE QUARTER MASTER GENERAL'S BRANCH

3 These fall into two main categories Movement and Maintenance and include —

i *Movement*.—The supervision of all systems of communications by road, rail and inland waterways and ensuring their maximum [illegible]

[illegible] transportation canteen and veterinary stores and animals Control of the Postal Services [illegible]

THE BRANCH OF THE MASTER GENERAL OF THE ORDNANCE

4 The duties of the Branch of the Master General of the Ordnance in the field include —

i. Provision, storage, maintenance, issue, repair and such inspection as is in the province of the D O S of all ordnance stores and material including armament and ammunition, administration of personnel of the Ordnance Services

v Research design and experiment in connection with ordnance stores and signal equipment in consultation with the branch of

5 Below G H Q the duties of the branch of the M G O are carried out by I A O C Officers under orders of the senior administrative staff officer of the Q branch while the A. G s and Q M G s Branches are amalgamated in degrees varying with the formation

THE MILITARY SECRETARY'S BRANCH

6 The duties of the Military Secretary concern the administration and appointment of King's commissioned officers

They include —

i Appointment officers to commands and to general administrative and instructional staffs Honours and rewards Officering of the Army in India

ii Transfer promotions exchanges postings leave etc of officers Appointment to civil departmental and extra regimental employment

iii Auxiliary and Territorial Force Army in India Reserve of Officers

iv Grant of temporary and acting ranks Confidential reports

7 The duties of the Military Secretary are carried out by an Assistant Military Secretary at the headquarters of an Army in lower formations they are carried out by the A G s Branch

5 ORGANIZATION AND DUTIES OF THE SERVICES

iii. Production

iv Holding repairs and local inspection

v Distribution

2 The mechanism for supplying the forces in the field with its daily requirements other than personnel is furnished by the services etc, in accordance with the distribution given below —

ii

iii *Graves* —Burial of dead registration of graves, enquiries regard

vi *Judge Advocate General's Service*—Advice on matters of military, air force martial and international law (in its military aspect). Review of trials held under military, air force and martial law.

vii *Medical Service*—Care of the sick and wounded and their evacua- [illegible] medical units [illegible]

viii *Ord* [illegible]

[illegible]

Army Forms

Books

Stationery (including typewriters and duplicating machines)

Deputy Controller Forms Calcutta

Central Publication Branch Delhi

Deputy Controller of Stationery and Stamps Calcutta

[illegible] *litho* [illegible] ection [illegible] r the

Provi[illegible]on and maintenance of all animal transport units
Carriage of supplies ammunition and stores between rail-

xv *Survey Service*.—Trigonometrical and topographical field survey, and all work incidental thereto, including production, re-

x

appliances
xviii. *Works* [illegible]
of t
(a)

[illegible] and transportation workshops, and for laundries is supplied by the service responsible for operation

3. It follows from the groupings of the duties of the services given in para. 2 above that the orders of the C in C will usually be communicated to the heads of services as follows —;

i *Through the C G S*
Survey service
Indian Signal Corps. (see footnote 1)

ii *Through the A G*
Provost service
Medical service.
Chaplains
Military Accounts service

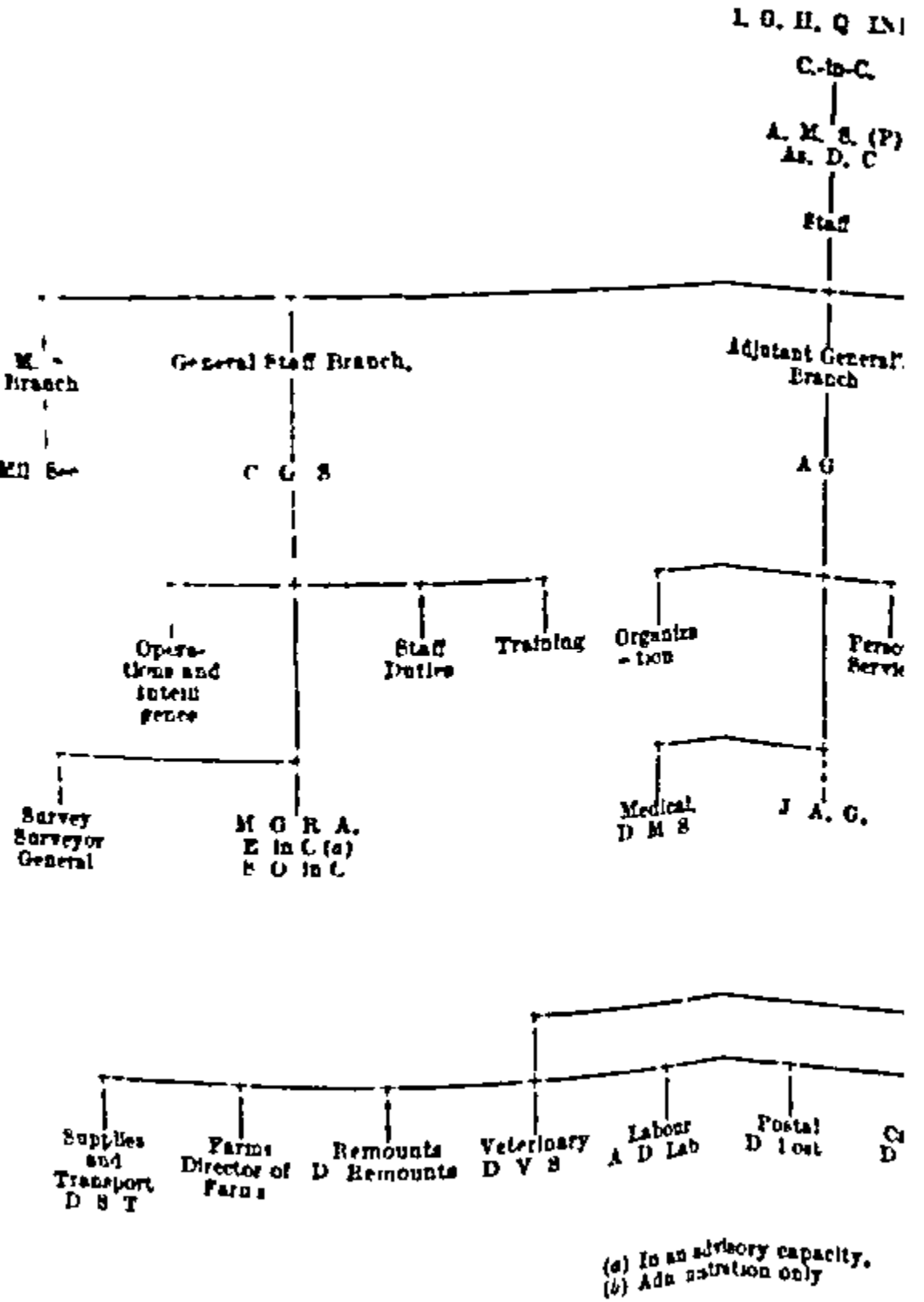
Judge Advocate General's service.
Graves
Printing and Stationery

ii *Through the Q M G*
Transportation service (through Movement Staff)
Engineer stores service (See footnote 2)
Hiring and Compensation
Works service (see footnote 2)
Remount service
Supply and transport service.
Postal service
Veterinary service
Canteen service

iv *Through the D M G O.*
Ordnance service

NOTES 1 The head of the Indian Signal Corps in the field will be res [illegible]

service


I. G. H. Q. (N)
C.-in-C.
A. M. S. (P)
As. D. C
Staff
M. Branch
General Staff Branch.
Adjutant General Branch
C. G. S.
A. G.
Operations and Intelligence
Staff Duties
Training
Organization
Personnel Service
Survey Surveyor General
M. G. R. A.
E. in C. (a)
E. O. in C.
Medical D. M. S.
J. A. G.
Supplies and Transport D. S. T.
Farms Director of Farms
Remounts D. Remounts
Veterinary D. V. S.
Labour A. D. Lab.
Postal D. Post
(a) In an advisory capacity.
(b) Administration only

Judge Advocate General's service.
Graves
Printing and Stationery

ii. *Through the Q M G*
Transportation service [illegible]

Veterinary service
Canteen service

iv *Through the D M G O.*
Ordnance service

NOTES 1 The head of the Indian Signal Corps in the field will be [illegible] ponsible to the C G S for the [illegible]

CHAPTER II.

INFORMATION, RECONNAISSANCE AND MAP AND PHOTO READING.

7 RECONNAISSANCE.

(*See* F.S.R., Vol. II, 1929, Chap. V.)

1 Detailed [illegible] and the theatre of [illegible] papers

The value of information depends on whether it can reach the authorities concerned in time to be of use [illegible]

2 Reconnaissance is the service of obtaining information with regard to —

i Topographical features and resources of a country
ii Movements and dispositions of an enemy.

In the [illegible]

CHAPTER II

INFORMATION, RECONNAISSANCE AND PHOTO READING

7 RECONNAISSANCE

(*See* F S R, V I II [illegible] Chap V)

1 D tail i and t [illegible] operations is a ne ss ry in [illegible]
Information is acqu r [illegible]

[illegible]

Th [illegible]
co [illegible]
no [illegible]
ex [illegible]
t [illegible]
[illegible] subordinate com [illegible] whom inf r nation is [illegible] as to the other com [illegible] to whom similar [illegible]

3 Information wh th r positive or negative [illegible] with the enemy is that on which every comman [illegible]

[illegible] forces but must similarly keep touch with [illegible] and report on [illegible] bouring forces

5 Reconnaissance is the service of obtaining information with regard to —

i Topographical features and resources of a country
ii Movements and dispositions of an enemy

[illegible]

[illegible] gathered during the course of [illegible] will be chiefly [illegible]

7 While the advanced troops are engaged with the enemy, information may also be obtained by —

i Personal observation on the part of a commander and his staff.
ii Officers patrols or scouts
iii Unit intelligence sections
iv Aircraft

8 In modern warfare the quest for information is not the exclusive privilege of any particular arm or body of specialists individuals and units [illegible] in —

i Ability to find the way by day or night.
ii Use of eye ear and ground
iii Concealment
iv Movement across country.
v Reporting
vi Map reading and sketching

10 In questioning prisoners or hostile inhabitants it is well to take them [illegible] that a great deal [illegible]

Cavalry, in sections, at a walk	120
" " at a trot	240
Artillery guns or wagons, at a walk	5
" " at a trot	10
Infantry in fours	200

Information as to the uniforms of the enemy, number of regiment on the buttons or badges, etc, may be of great use

12 The [illegible]

Tracks may give warning of enemy a patrols show the formation direction and speed of his force and almost the hour when the force passed by by the marks of the feet hoofs wheels, etc

iv *Sounds* —Sound travels at the rate of about 380 yards a second Roughly four beats of the pulse to 1 000 yards is a fair calculation

The sound of the explosion overtakes the modern pointed bullet at about 2 000 yards A double report is heard when the bullet is fired by some one exactly facing the hearer

13 In India heat vapour often has curious effects on the appearance of [illegible]

i Make sure that what has to be done is understood *i e* how far to [illegible]

ii [illegible]

i [illegible]

i [illegible]

A verbal report should be as far as possible in the same as a written report Make the messenger repeat the *message* before he leaves

16 Reconnoitring aircraft can be expected to distinguish troops in the open and artillery in action and can dive near enough to the ground to pick up a definite point such as the existence of a machine-gun emplacement or whether a trench system is occupied or not *Although observers* may easily find the enemy a main body it may be difficult for them in mobile warfare

8 PREPARATION OF RECONNAISSANCE REPORTS.

2 Where the names of foreign places or towns are spelt in various ways, the spelling should be in accordance with that used on the map, or where

A report without a map or sketch for reference is of little value whereas

Reconnaissance of Roads

vii Local administration, names and addresses of mayors and chief civil functionaries

ix. Telegraph and telephone lines and offices

iv Points where special measures for protection against attack by A F Vs or aircraft must be taken

7 In any sketch illustrating the report, roads may be classified as follows —

1 As regards width by the letters—

"A"—

"B"—

"C"

should be shown

River Reconnaissance

8 Headings used in Part I will vary according to the tactical object; those in Part II which normally contain nothing but facts about the river need not vary In reporting on a river the most material considerations are —

1 Average width and depth in different stretches

9 The velocity of a river can be found by throwing a piece of wood well out and timing it over a measured number of feet Mean velocity = ¾ surface velocity, ¾ mean velocity in feet per second = number of miles an hour.

10 When the object of the reconnaissance is to report on the river from the point of view of the *defence*, the following points should be considered —

of arch in a masonry bridge and number and detailed dimensions of girders in a steel bridge

11 *In attack* the points on which information is required are similar to those above with the difference that facilities for attack should be reported instead of those for defence stretches of the river favourable to the construction of improvised crossings should be reconnoitred and reported in greater detail, and the existence of material on the spot suitable for the construction of these crossings should be noted and particulars given

Reconnaissance of a Position

In attack

12 In reconnoitring a position on which an attack is contemplated definite information will *rarely be obtained without fighting* since it will be [illegible] The troops engaged in [illegible]

14 The following are the principal points on which information will be required —

i Extent of the position and location of the flanks
ii Enemy's defensive dispositions —
(a) Defensive posts and obstacles
(b) Machine gun emplacements
(c) Gun positions
[illegible] probable lines [illegible] the plan of [illegible]

15 The following are the principal points on which information will be required —

[illegible]
(f) Obstacles both natural and artificial
(g) Probable lines of movement for the enemy's assembly positions for his reserves including tanks

(h) Su[illegible] of roads [illegible] tive arra[illegible]ments e g [illegible] of ammunition food water evac[illegible]ation of casualti[illegible]s

In def[illegible] c

NOTE It [illegible] invariably [illegible]lp to decide [illegible] suitable di[illegible]trib[illegible]tion of troops if the pos[illegible]t o[illegible] is looke[illegible]d at fro[illegible] the en[illegible]y [illegible] w[illegible]point

17 The rej[illegible]ort [illegible] deal w[illegible]th

i Extent of th[illegible]e pos[illegible]tion
ii D[illegible]f[illegible]ns[illegible]ve ca[illegible]ab[illegible]l[illegible]t[illegible] of flanks
iii Ob[illegible]servati[illegible] o[illegible]er [illegible]ntry to be tra[illegible]ersed [illegible] attacker His probable [illegible]sseml[illegible] [illegible]o[illegible]itions
iv Conceal[illegible]e[illegible]t of th[illegible] defence
v Ob[illegible]servatio[illegible] by the atta[illegible]k
vi Tactical points the loss of which will pr[illegible]ju[illegible]ce th[illegible]e conduct of *th[illegible]e defence*

PECONNA[illegible]SSANCE OF RAILWAYS

18 Although an expert wo[illegible]ll be requ[illegible]red to write an adequate report on which to work a railway or estimate its capacity informat[illegible]on preferal[illegible]ly accompanie[illegible]d by d[illegible]m[illegible]nsioned sketch[illegible]s under th[illegible]e fol[illegible]owing [illegible]eads will suffice for most p[illegible]rposes

19 *Important stat[illegible]ons* —

1 *Approaches and [illegible]f[illegible]tm[illegible]ng up [illegible]pla[illegible]es* —Area water supply latrine and urinal accomm[illegible]odation etc

[illegible]

9 MAP READING AND FIELD SKETCHING

1 *Map Reading*—Always examine a new map systematically Look at the following in the order given —

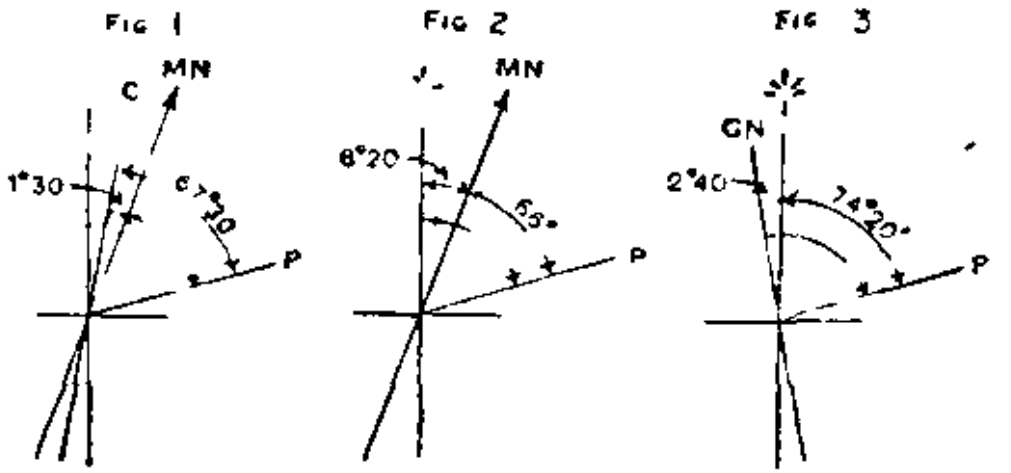
(*a*) Scale
(*b*) Direction of true grid and magnetic north
(*c*) Grid—The size numbering and relation to the sheet edges.
(*d*) Contour Interval (V I) or method of representing relief.
(*e*) Conventional signs
(*f*) Date of publication and other marginal information

2 *Bearings*—[illegible] the line joining [illegible] south line wh[illegible]

(*a*) *Grid* [illegible]

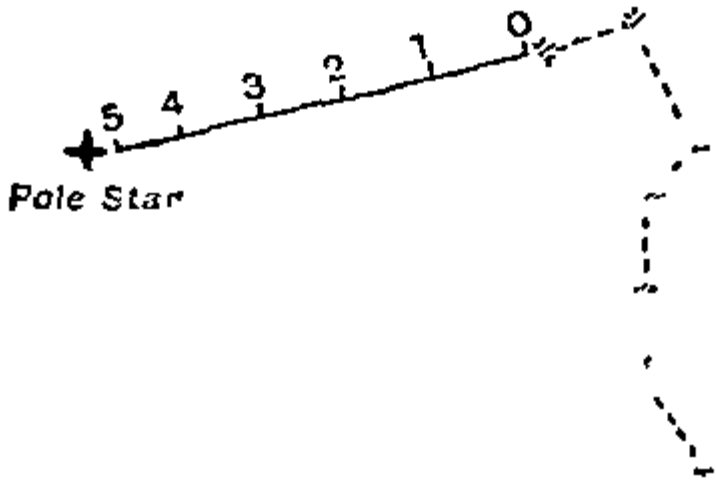
(*b*) *Mr* [illegible]

as grid bearing



4 *The prismatic compass*—The dial of the compass is graduated with two sets of figures, the inner circle being for direct readings, the outer for

Fig 4



5

SYSTEMS OF REFERENCE

10 There are two systems of reference in use on Indian maps —

i. *The Minute Mesh* —This consists of a series of rectangles each measuring one minute of longitude by one minute of latitude. The position of any point is described by giving the letter of the square in which it falls followed by the co-ordinates of the

Fig 6

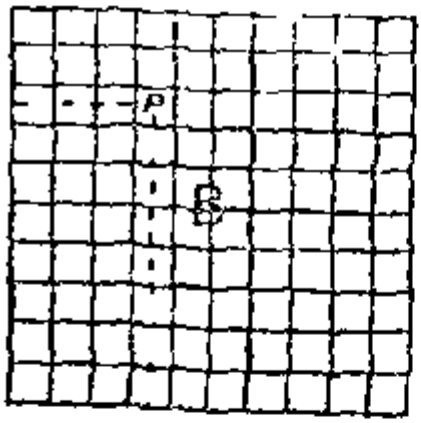
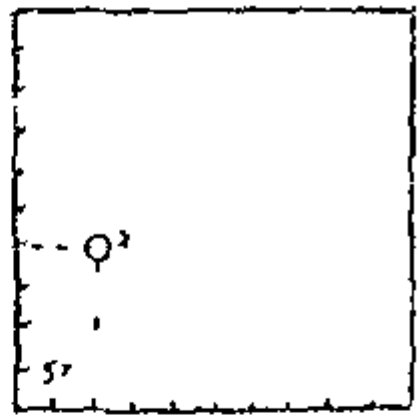


Fig 7.



11 *Field sketching* —Every sketch should show the following references —

v The clear signature of the sketcher
vi Date
vii Statement of the weather conditions under which the sketch was made
viii Method used in making the sketch and the time taken, in order that the user may judge of its accuracy

6 *Slopes* [illegible] p[illegible] an[illegible] e [illegible] [illegible]ssed by angles *e g* a slope of 4° or as a gradient *e g* [illegible] or 1 in 15 [illegible] means a rise of 1 unit vertically for every 15 units tra[illegible]el[illegible] horizontally Note that [illegible] is the tangent of the ang[illegible] of slope

An approxin[illegible] [illegible] in degr[illegible]
is to di[illegible] the [illegible]
to [illegible] This is [illegible]

Scales —[illegible]
showing the rel[illegible]
[illegible] Foreign [illegible]
are constructed [illegible]
of 10

The following exa[illegible] [illegible] methods —

(*a*) Scale $\frac{1}{63\ 0}$ or 1 [illegible]

(*b*) 1 100 000 or (or 1 ——) o[illegible] eign map 1 centimetre to 1 kilo metre

[illegible] tative Fraction or R F esents a certain number from (*a*) above— he gro nd (= 1 mile) 00 000 inches on the esents 100 000 centi

[illegible] any map that has a [illegible] t is given the number of mi es to the inch [illegible] tus if R F is $\frac{1}{80\ 0}$ [illegible] $\frac{000}{60}$ = 1 263 miles to tl e inch

To find tl e number of in h s to tl e mile di[illegible] [illegible] by the denominator of the R F [illegible] thu[illegible] if R F is $\frac{1}{000}$ then $\frac{80\ 0}{63\ 30}$ [illegible] inch to the mile

[illegible]

MAPS PUBLI[illegible]D BY THE SURVEY OF INDIA

9 Tl ese maps inc ude the following —

Nomenclature	Scale
1 1 on Sl eet	1/ 1 000 000
Degree Sheet	1 = 4 miles
½ S eet	1" = 2 miles
¼ Sheet	1" = 1 m le

The tactical map for the army in India is the 1 to 1 n ile sheet

SYSTEMS OF REFERENCE

10 There are two systems of reference in use on Indian maps —

i *The Minute Mesh*—This consists of a series of rectangles each measuring one minute of longitude by one minute of latitude. The position of any point is described by giving the letter of the square in which it falls followed by the co-ordinates of the

Example—

Fig 6

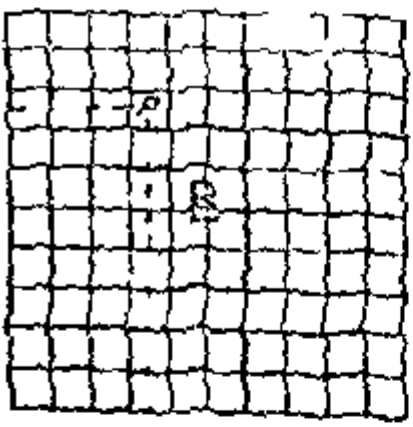
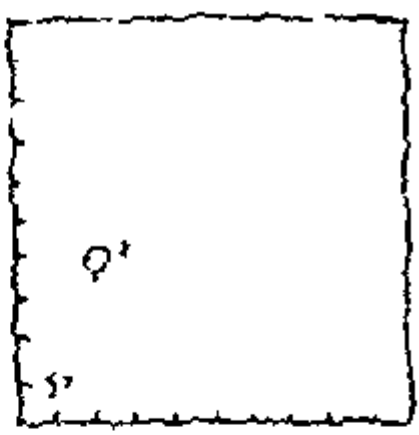


Fig 7



[illegible] and [illegible] are given in the margin of all gridded maps

11 [illegible]

vii State[illegible]ent of the weather conditions under [illegible] the sketch was made

viii Method used in making the sketch and the [illegible] in order that the user may judge of its accuracy

12 *Map enlarging* —When it is required to enlarge a map squares of any [illegible] which

i Those used on ordinary maps in time of peace The more im- [illegible] the map

ii [illegible] late II.
iii [illegible]

10 AIR PHOTOGRAPHS AND THEIR INTERPRETATION.

GENERAL

1 Air photographs are of two main types —

i Vertical
ii Oblique

The former are sometimes made up into mosaics and both types if taken in an appropriate manner can be viewed in a stereoscope to give the effect of relief [illegible]

All prints have printed on them the following data —
R A F unit and photo index number map reference
Date and hour when taken focal length of lens and height from which taken

Demands for air photographs should state —

In the case of verticals it should also be stated if they should be taken at any particular time on account of shadows
In demanding obliques it will be [illegible] —

Large (1/3 000 to 1/6 000)
Medium (1/6 000 to 1/10 000)
Small (1/10 000 to 1/20 000)

Plate I

ICE and ROCK FORMS

. DETAIL.

y lettering to be used.
n in black.

Embankme

etc

Mile

ford

Hops
10 high

7

Oaks

Wood

ocks covered
at high water

Cra e A thouse

nte

(e) M

Often in pairs or sited in a

cadade of wire o

Number of photographs that can be dealt with by a squadron in India in one day provided sufficient ice is available —

	Normal	Under extra pressure
Negative	100	300
Prints	600	600

The approximate time in which advanced copies of important prints ready is 2 hours from the end of sortie in winter and 3 hours in summer.

INTERPRETATION OF VERTICAL PHOTOGRAPHS

[illegible]

The *scale* is found by comparing the distance between easily recognizable jects on the photograph and the map

$$\text{R F of photograph} = \frac{\text{Distance on photo}}{\text{Distance on map}} \times \text{R F on map}$$

If this method is not possible an approximate scale can be obtained from e following formula —

$$\text{R F (of photo)} = \frac{\text{Focal length of lens}}{\text{Height of camera}} \text{ (both being measured in inches)}$$

North point if not shown can be found roughly from the position of the adows and the time at which the photograph was taken

Identification of an object depends principally on —

1. *Its shape* —[illegible]

II [illegible]

[illegible] of its surface

[illegible]

[illegible] is dark

Plate IV indicates the appearance of many topographical features in a vertical photograph as indicated in the key diagrams

Some indications for the identification of works of military importance are as follows —

(a) *Trenches* —Lines of alternate traverses and fire bays combined with the shadow cast in excavations In dummy and incompleted trenches there is comparative absence of shadow

(b) *Rifle pits* —Marks of excavation and spoil Tracks [illegible]

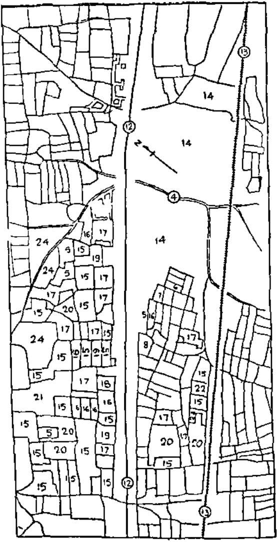
PLATE IV

VERTICAL AIR PHOTOGRAPH

(With key and key diagram)

KEY

1 Kacha road with trees
2 Fort
3 Nallah (wet)
4 Irrigation ditch
5 Buildings
6 Graveyard
7 Kacha Road
8 Fort
9 Cultivation
10 Trees
11 Karez
12 Pakka road and trees
13 Railway (single track)
14 Village
15 Fallow land
16 and 17 Maize
18 Sorghum
19 Chillies
20 Sugar Cane
21 Orchard of pear and pomegranate planted after ateip
22 Rough pasture clumps of thick grass
23 Rough plough
24 Cemetery and rough ground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PLA

VERTICAL AIR

(With key and

KEY

1 Kacha road with trees
2 Fort
3 Nallah (wet)
4 Irrigation ditch
5 Buildings
6 Graveyard
7 Kacha Road
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13 Railway (single track)
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18 Sorghum
19 Chillies
20 Sugar Cane
21 Orchard of pear and pomegranate plants
22 Rough pasture clumps of thick grass
23 Rough plough
24 Cemetery and rough ground

CHAPTER III

ORDERS AND INTERCOMMUNICATION.

11 GENERAL RULES REGARDING ORDERS INSTRUCTIONS, REPORTS AND MESSAGES

1 All orders instructions reports and messages will whenever possible be in writing They should always be —

i Legible in a bad light

[illegible]

2 *An important order or messag (given verbally should be recorded in* writing by the recipient and confirmed in writing by the issuing officer at the earliest opportunity If sent by telephone the order should be checked over before ringing off

3 The orderly should always be made to repeat the message before leaving The recipient must give a receipt for the message noting on it the hour and date

RULES REGARDING THE EXECUTION OF ORDERS IN THE FIELD

4 Notwithstanding the greatest skill and care in framing orders unexpected local circumstances may render the precise execution of an order unsuitable or impracticable In such circumstances the following principles will guide the recipient of an order in deciding the course of action —

i A formal order will never be departed from either in letter or spirit—

[illegible]

ens ie

iv Should a subor linate find it necessary to depart from an order he will immediately inform the issuer of it and the commanders of any neighbouring units likely to be affected

CLASSIFICATION OF ORDERS AND INSTRUCTIONS

5 Orders in the field are *classified* as —

i Standing orders—

ii Routine orders

iii Operation orders

Instructions are classified as —

i Operation instructions

ii Administrative instructions

In addition *Orders of the day*

STANDING ORDERS

ol ject of stan ling orders is to [illegible]

[illegible]

of which is subject to frequent change Repetition of existing regulation is to be avoided

They are prepared by all branches of the staff in consultation and issued by the A G s branch They must be kept up to date

Routine Orders

7 The object of routine orders is to facilitate the normal working of the administrative services and to ensure co-ordination thereby reducing correspondence

Operation Orders

8 Operation orders deal with all strategical and tactical operations

The object of an operation order is to bring about a course of action in accordance with the intentions of the commander and with full co-operation between all arms and units

10 *An operation order must contain only what the recipient requires to know* — Any attempt to prescribe to a subordinate at a distance anything which he, with a fuller knowledge of local conditions should be better able to decide on the spot is likely to cramp his initiative in dealing with unforeseen developments and will be avoided Such expressions as will await further orders," will not be used

Operation orders will enter into details only when absolutely necessary

11 It may sometimes be convenient for a commander to distribute a sufficient number of copies of his operation orders to his immediate subordinate commanders for distribution to the formations or units under their command the distribution list will then show what copies are avail-

No.	Date	Train or Engine			Starting point	Time	Route	Remarks
			From	To				
(1)	( )	(3)	(4)	(5)	(6)	( )	(8)	(9)

OPERATION INSTRUCTIONS

22 Operation instructions are of two kinds and for two purpos

In a written order to admit of easy reference paragraphs will be numbered consecutively throughout and sub paragraphs lettered Sub paragraphs will not be subdivided by further lettering or numbering

The insertion of headings to indicate the sequence of an order or the contents of paragraphs may not always be necessary but a long order is often easier to grasp quickly if this is done

16 The following is a suitable form for operation orders —

SECRET

Div Operation Order No

Ref Map *Copy No*
Date

Information —

Regarding the enemy A statement of facts and deductions To be limited to that necessary for the recipients to know to carry out their tasks

[illegible]

Alternative plans and conditional statements depending on developments will be avoided

The future imperative tense will be used e g will advance will attack

Method

[illegible]

A B
Col G S
Div

Method of issue
Time of origin †
Distribution

An operation order must be acknowledged by all recipients as a matter of routine though not necessarily by message

† *The time at which the orders are signed by the originator*

‡ *Distribution*

The distribution list should be in logical order e g —

Own formations and units
Own subordinate commanders and services
Own commander
Own staff
Attached troops
Higher and war diary
Formations and units co operating

17 *Appendices*—It may often be advisable to place in appendices details such as the [illegible] order of battle, composition of a [illegible] to insert the order of march, [illegible] plan of attack, least [illegible] in the instructions essentials in the body of the order. Tabulation of [illegible] clearness.

18 *Maps and appendices* should be marked with the [illegible] number as the order to which they are attached and arranged [illegible] same way up. Maps should be folded so that they may be read together.

OPERATIONS OF A SEPARATE MARCH

1 Troops will be detailed in order of march. If a separate command is appointed for a [illegible] troops, an officer will be specified and the troops will be detailed in order of seniority of arms and units, their order of march being left to the commander to arrange.

The detail of troops will be shown either in the body of the order or on a separate march table attached to the order as an appendix.

0 The following is a suggested form of detail.

SECRET

Copy No

Serial No	Date	Formation or unit	Place		Start point	Route	Points	Remarks
			From	To				
(1)	( )	(3)	(4)	( )	(6)	( )	(8)	(9)

23 The heading of an operation instruction will be in the form :—

SECRET

1 Div Operation Instruction No

(Issued in conjunction with 1 Div Operation Order No
dated)

To Copy No .
Date

Ref Map

24 Operation instructions will always be arranged in the same sequence as that given for operation orders only such headings being used as are necessary

25 They will be addressed personally to subordinate commanders and will often be couched in less formal terms than orders e g your role is

ISSUE OF ORDERS AND INSTRUCTIONS

[illegible]

obtaining at the moment

[illegible]

28 Normally orders will be issued through the usual official channel

[illegible]

32. The heading of an administrative order will be in the form —

SECRET

1 Div Administrative Order No

(Issued in conjunction with 1 Div Operation Order No dated

Ref. Map Copy No ..
Date ..

The following are the principal matters to be considered by the several branches in the preparation of administrative orders —

33 [illegible]

(i) Pr[illegible]

(iv) Administration of captured areas arrangements for control of civil population for salvage of archives for examination of water supplies and sanitary precautions generally

(v) Miscellaneous disposal of captured documents supply of cash arrangements for clearing battlefield and for burials

(iv) Arrangements for ammunition supply position and stocks of temporary depôts and to what formation if any they are specially allotted Instructions regarding accountancy and time at which ammunition expenditure returns are to reach the various H Qs

(viii) Works service method of supply of stores and material any [illegible] field formations

evacuating

and

xii Any special organization improvised to meet special circumstances either actual or anticipated such as the arrangements for the formation of animal pack transport units to replace the normal organization of wheeled transport

3. To be considered by the M G O Branch —

i Arrangements for ammunition supply in rear of field formations

ii Location of Ordnance field units and mobile and stationary workshops

iii Arrangements for the supply of Ordnance Stores

ORDERS TO THE [illegible] FOR ARMY CO-OPERATION

(a) The following points which it is necessary for the air force and for subordinate formations and services to know may be included in the body of the operation order —

Under METHOD —

i *Allotment of squadrons to subordinate formations* —This will be necessary in a corps order when squadrons are allotted to a subordinate formation. The formation under command of will always be used for this purpose

The designation of each squadron placed under command of a subordinate formation should be given

ii *Allotment of aircraft to the [illegible] of subordinate formations* —If a subordinate formation has been made responsible for close reconnaissance or artillery reconnaissance and a complete squadron has not been placed under its command it will be [illegible]

iii *P[illegible]* [illegible]

iv *Air reconnaissance areas of subordinate formations* —If subordinate formations are being made responsible for air reconnaissance [illegible]

vi *Method of relief of aircraft* —Normally aircraft on continuous reconnaissance are relieved in the air If however it is desirable that relief should take place on the ground in order that the second pilot going up may be instructed on the results of the report of the first pilot, this should be stated.

[illegible] INTELLIGENCE —

[illegible]

[illegible] Will be applicable to aircraft or stations com[illegible]

[illegible] *Wording for* [illegible] report of [illegible] information

[illegible] of air recon[illegible] may include a state[illegible] allotted and the [illegible] stated [illegible] the information is required

Subject head[illegible] the points to be dealt with under each, are as follows

i *Appreciation* In addition to further information a brief forecast [illegible] should be given A summary of [illegible] of other reconnoitring troops may be included

ii *Reconnaissance area* A definition of the *reconnaissance area for* which the formation issuing the instruction is responsible is given unless this has already appeared in the body of the operation order

iii *Task in general*—In this paragraph should be summarized the main object to the attainment of which the reconnaissance is principally to be directed

The written orders for reconnaissance may be amplified from time to time during the operation while they are framed to cover by means of verbal orders or messages sent to the intelligence liaison sections with the squadrons or by communicating with the pilots in the air by R/T or W/T direct

[illegible] — The allotment of aircraft to

(ii) The detailed orders for artillery reconnaissance will normally be incorporated in the body of the operation orders issued by artillery commanders

(iii) The paragraphs of the artillery operation orders which refer to the air force will contain details under the following headings —

(a) Allotment of artillery reconnaissance aircraft and balloons.
(b) Reconnaissance areas with their call signs and frequencies to be used by aircraft working over the area (This is usually issued as a tracing)
(c) Artillery zones for answering air calls
(d) Air calls to be sent and answered
(e) Ammunition expenditure on air calls
(f) Arrangements for pre arranged registration and impromptu shoots

PEPORTS

37 It is more important that the information contained in a report should be accurate and relevant and arrive in time to be of use than that the report

Sec 9 11)

DETAILED RULES FOR PREPARING MESSAGES ETC

45 *All orders instructions reports and messages must be dated* —Dates will be written in the form 3 Sep 25 and not in the numerical form 3/9 25

The names of months will be abbreviated by the use of the first three letters When using the message form (A F C 2108) neither the month nor the year will be inserted in the date space which is for the day of the month only

46 A night will be described thus —

night 29 30 Sep or
night 30 Sep/1 Oct
night 31 Dec/1 Jan "
" midnight 29/30 Sep "

47 Time will be described by reference to the 24 hour clock Groups of four figures followed by hrs ' will be used The first two figures represent the hour and the last two the minutes past the hour

Example — 0001 hrs ' one minute past midnight
0900 hrs ' nine o clock in the morning.
1200 hrs ' noon
1635 hrs ' *twenty five minutes to five in the afternoon*

plain

a message

If the map referred to is squared or gridded the first time a place is mentioned it will always be followed by its co ordinates and full use should be made of co ordinates in giving locations If no squared or gridded map is available the most suitable of the following methods should be used —

iii By description
Example — Cross roads ½ mile S W of second E in (*NOT of*)

53 *Roads* will be indicated by place names on them care being taken to name sufficient places to ensure that the road intended is followed They will be described as road BAGSHOT CAMBERLEY and not ' BAGSHOT CAMBERLEY road

54 *Positions and areas —All positions will be described from right to left* looking towards the enemy
An area will be described by taking the northernmost point first and giving the remaining points in clockwise order

55 *Boundaries* —If generally parallel to the line of advance, will be described from rear to front and in defence and withdrawal from front to rear If generally parallel to the front line they will be described from to left as in the case of a position

river

Two med btys are placed under the comn and of 3 Div * but
o Div will advance

When it is des red to refer to a unit or formation from which a portion is excluded the unit or form ation will be named and the words less used e g —

64 Ambiguous or conditional terms such as dawn dusk as soon as possible should may are inadmissible in an rder and are only to be used in an instruction or report when there is a deliberate intention to be indefinite

65 The following is a specimen report not intended for transmission by signals —

To —1 LOYALS No 7
Ref Map* 3 Sep 2a

J JONES Capt
Comdg 'A Coy
1 LOYALS"

1140 hrs

* Unnecessary, if no confusion can arise from its omission

12 INTERCOMMUNICATION

1 Th s rvi e of intercommunication is provided by —

i l n t f th Ind an Signal Corps
ii mal r an l orderl f rming part of other units
iii The I at i T l grap hs Department of the Government of India

The p al r deals w th pri ate po tal matter and tl ose official letters of wh h tl e urg n y does not justify their despatch through the signal ser

2 The espon l l ty for interco nmunication in the field is governed by the follow n gen ral pri ciples —

Signal Traffic in the Field

i Emergency signal service messages connected with the working of the system

ii e system

(*Note* —The Royal Navy and Royal Air Force recognize an add category known as Important If any such messages Army Signals they will be given precedence after Priority

[illegible]

9 Messages to go by the despatch rider letter service are marked D R L S by the sender and are sent off by signals in batches at suitable times

Very urgent messages may be marked Special D R by certain officers entitled to do so and are sent at once by a special despatch rider if one is available

10 Certain senior officers are entitled to ask for clear the line telephone connections which take precedence of any calls which are waiting for connection This privilege should be sparingly used

11 The senior signal officer on the spot is alone entitled to send emergency signal service messages

[illegible]

In urgent circumstances any officer may mark a telegram Priority or a message for Special D R but he will be responsible that his action is justified by the urgency of the message

12 The fact that a message is important should be notified by the officer concerned to the signal office signals are then responsible for selecting the methods of despatch to be employed and for reporting to the originator if there is undue delay in the delivery of the message to the signal office of destination

13 Special arrangements will be made by the general staff at G H Q regulating the censorship and despatch of private or press telegrams They will not be accepted unless it has been officially notified that the signal offices are open for such messages and they will not be allowed to delay official messages

14 Communications of a secret nature should usually be in cipher if there is danger of their interception by the enemy but it must be remembered that ciphering and deciphering cause loss of time Messages giving warning of an enemy attack or calling for support may always be sent in clear

Rules for Preparing Messages for Despatch by Signals

[illegible]

18 The instructions regarding the spaces to be used by the originator and signals are printed on A F C 2108 and should be strictly observed

19 *Address To and From* —Addressees and originators of messages will be designated by their authorised abbreviated titles or by code names if allotted

An officer signing a message will never be designated by his name or appointment in the address To or From unless it is essential to do so

Code names are secret and will be communicated as required by the G S Branch These code names will always be used within the danger zone which is the area within which the enemy may be assumed to overhear telegraph or telephone messages In that zone names of units or formations will never be transmitted in clear and code names will always be used by the originator in messages and in all telephone conversations

W/T Night 2 3 Sep"

Only one word or abbreviated word will be written in each space of th message form *e g* —

Arty. R CCRA," will each occupy one space

25 *Ending* —In the case of multiple addresses when it is desired to inform addresses that the message has also been sent to other addressees, it will b ended thus —

(Using code names) Added KOLIN LOPTA KIRON"

The instruction applying to any particular message are those given in the s, ace in which the orig tator signs his name

It is unne ssary for the originator to del te the spaces not signed.

* When this is not necessary the signal officer will inform the or concerned

28 The following is a specimen message handed into Signals for transmission

ARMY FORM C 2128 (Pads of 100)	MESSAGE FORM.	DATE STAMP.
CALL IN / OUT	Serial No	
	No of Groups	
PREFIX AND INSTRUCTIONS	GR	

(ABOVE THIS LINE IS FOR SIGNALS USE ONLY)

TO
4—5—6 inf bde—RA—RE—Sigs—1 div—3 Div.

FROM
2 div

Originator's Number 07		Date 10		In reply to Number
Ref	Map	53 H 6	one	inch
AAA	bridge	0480	will	be
prepared	demolition	by	CPI	assisted
working	party	5	inf	bde
who	will	obtain	stores	from
SHAHDARA	0 0	AAA	ACK	added
1	inf	bde	RI	reptd
4	and	6	inf	bdes
RA	1	div	3	div

Time of origin—0300 | Degree of Priority and Instructions by Originator

This message may be sent AS WRITTEN by any method

G S 2 Div
Signature*

Signature*

Signature*

*Originator must sign in the appropriate space

(BELOW THIS LINE IS FOR SIGNALS USE ONLY)

T. H. I.	System in	Time in	Reader	System out	Time out	Sender.

NOTE I.—[illegible]

ORDERLIES

9 [illegible] Th

[illegible] Th

[illegible] T

[illegible] A

[illegible] ear

[illegible] O

[illegible]

PHONETIC MORSE AND SEMAPHORE ALPHABETS

30 When it is necessary to spell out words in telephoning a message the following phonetic alphabet will be used It is alphabet is common to the Royal Navy Army and L A F

A Able	J —Jerrie	S —Sugar
B —Beer	K King	T Tac
C —Charlie	L —London	U —Uncle
D Don	M Monkey	V —Vic
E —Edward	N —Nuts	W —William
F —Freddy	O —Orange	X —X ray
G —George	P Pip	Y —Yorker
H Harry	Q Queen	Z —Zebra
I Ink	R Robert	

13 CIPHERS AND CODES

1 A cipher is a secret means of communication A code is a no secret means of communication and is used for abbreviating the original text

2 The following rules will govern the process of ciphering and deciphering messages —

I The text of a cipher message will never contain words in plain

3 Ciphers can be divided into three classes
i Transpos on in which the position of the letters of the text is [illegible]

4 The transposition cipher is a simple form of cipher which may be used in emergency when no other cipher is available
In this cipher the letters of the original text are not changed, but their order is altered according to a key obtained from a keyword

The following considerations should be borne in mind when selecting a keyword —

i It should contain from 8 to 18 letters
ii It may consist of one or more words
iii It should be easy to remember and spell

As the security of this cipher depends on the keyword knowledge of the keywords used should be kept secret
Keywords should be changed frequently if the traffic is considerable

5 To illustrate the procedure of deciphering the following example is worked out with the keyword FIRST DIVISION

i From this keyword the transposition key is obtained as follows —
Reading from left to right the first letter of the alphabet to occur [illegible]

The transposition key obtained from FIRST DIVISION" would therefore be —

F	I	R	S	T	D	I	V	I	S	I	O	N
2	3	9	10	12	1	4	13	5	11	6	8	7

ii Under this key the message must now be written figures and punctuations being in letters The sample message to be ciphered is
Right leading coy is advancing on pt 300 no opposition encountered

This is written under the key as follows —

2	3	9	10	12	1	4	13	5	11	6	8	7
R	I	G	H	T	L	E	A	D	I	N	G	C
O	Y	I	S	A	D	V	A	N	C	I	N	G
O	N	P	T	T	H	R	E	E	N	O	T	O
H	T	N	O	U	C	H	T	N	O	O	P	P
O	S	I	T	I	O	N	E	N	C	O	T	N
T	I	R	E	D								

The last line of letters should never be a complete line, if necessary dummy letters should be added to make the line complete

ii [illegible]

etc

iv The transposed message is written in groups of five letters

v The total number of letters in the text will be given in figures immediately before the first cipher group

vi The above message ciphered ready for despatch will therefore, be —

70 LDHGO POOHO TIXNT SEEXR HXDNE
XXXIO OOCGG PXGXU PUGIP XIRHS
TOTEI CXOCT ATUID AAETE

[illegible]

2	3	9	10	12	1	4	1?	5	11	6	8	7
R	I				L	E		D		X		
O	X				D	X		X		I		
O	X				H	R		T		O		
H	T				G	H		X				
O	X				O	X		X				
T	E											

CHAPTER IV

MOVEMENTS OF TROOPS BY ROAD

14 MARCHES AND MARCH DISCIPLINE

(See T S R Vol II 19) Sec 11? et seq)

GENERAL RULES

1 The rate of marching throughout a column should be uniform An irregular pace is not exhausting to the troops especially to those in rear of the column

No trumpet or bugle call is allowed on the march columns being directed by signal A system of rapid intercommunication throughout the column is essential On service no compliments are to be paid unless special orders are issued to the contrary

3 An average march under normal conditions for a large column of all arms is 15 miles a day with a rest at least one a week on all commands or seasonal troops can cover longer distances under favourable conditions

4 An officer will be available will march in rear of each squadron battery company or other unit to see that no straggling takes place and that the sections files vehicles and animals keep properly closed up and that the column does not unduly open out

5 By order of the commander of the column distances given in Sec 15A 9 4 and 5 may be increased in dusty or hot weather and reduced or omitted when marching by night and by day when an engagement is imminent

6 The normal march formations on a road are—

For cavalry	Column of sections or of half sections *i e*, 4 men or 2 men abreast
For artillery	Column of route *i e* guns and vehicles in single file
For A T Vs	Column of route *i e* single file
For infantry	Column of route *i e* fours
For cyclists	Half-sections, *i e* 2 men abreast
For motor vehicles	Single file

[illegible]

[illegible] When marching on a road not more than four [illegible] two horses if in half sections [illegible] including commanders etc

[illegible] column commanders centre guides et [illegible] in [illegible] between units or fill up blank [illegible]

[illegible] When marching in fours not more than four men [illegible] including officers and supernumeraries Hands and drums [illegible] uniform

[illegible] and officers are to be mounted at all times when marching in fours the fact of [illegible] is not to affect the relative [illegible] of commanders [illegible]

[illegible] Camp followers as [illegible] civilians etc [illegible] to accompany troops on the line of march must be marshalled and made to [illegible] the regulations laid down for infantry

[illegible]

In fixing the starting point care must be taken that each unit reaches it by moving forward in the direction of the enemy Fighting troops with their field transport [illegible] dence on the road over all other transport during the movement to the starting point

Should a march begin in the dark special arrangements for marking the starting point will have to be made and notified in operation orders Lights may be used for this purpose but they must be effectively screened from the enemy

1° *Halt*—On the *Halt* being sounded everyone will at once halt and fall out on the same side of the road on which they are marching

[illegible] and all ranks

[illegible]

At the commencement of these halts mounted troops will remove their equipment at once and mounted troops will dismount and loosen girths Riding horses heads will be turned towards the space left clear for traffic

13 *Fords*.—The following depths are fordable:—

	ft	in
Cavalry	4	0
Infantry	3	0
Tanks medium	*4	0
Light	*2	6
Armoured cars—		
Crossley	1	10
Tractors and horsed vehicles	2	6
Lorries and heavy ambulances	2	0
Motor cars	1	6
cyclists	1	0

Gravelly bottoms are best; sandy bottoms are bad as the sand gets stirred up, thus increasing the depth of water.

The depth of a river is generally most uniform in straight parts; at bends the depth will generally be greater at the concave bank and less at the convex.

For this reason a river which is not anywhere fordable straight across may be found passable in a slanting direction between two bends.

All fords should be clearly marked by strong pickets driven into the river bed above and below the ford, their heads being connected by a strong rope. Marks should be made on those pickets which stand in the deepest water at a height of 3 feet and 4 feet above the bottom, in order that any rise of water above the fordable depth may at once be evident.

14 *Military bridges*.—Military bridges are classified according to the load they are designed to carry, as follows:—

Horse traffic will cross at a walk; riding horses should be mounted; spare horses should be led singly by mounted men.

Mechanical transport will cross a floating bridge dead slow. If it becomes necessary to halt, heavy gun axles or tractors should rest as near as possible midway between two piers, so as to distribute the weight evenly over both piers.

15 *Loads on existing bridges*.—When it is required to know whether an existing bridge can carry a specified load, this information can be obtained:—

i. From the local civilian authority.
ii. By comparing the specified load with the civilian loads which use the bridge. Bridges habitually for heavy civilian loads are frequently labelled to that effect.
iii. By inspection. Except in simple cases only an expert in the particular type of bridge can form a reasonable estimate by inspection only.

---

*Provided the bottom of ford is sound.

iv By calculation which except in simple cases may take much time As a guide the following table gives the thickness of arches of *brick in cement* which will carry certain loads over varying spans —

Span (in feet) (1)	Thickness of arching at crown in inches	
	For loads up to 10 ton axles or 20 tons on tracks (2)	For loads up to 15-ton axles or 30 tons on tracks (3)
10	1[illegible]	13
15	15	17
20	17½	19
25	19	21
30	21	23
35	22	25
40	23	26
45	25	27
50	26	28
55	[illegible]	29
60	28	31
65	29	32
70	30	34

In the case of plain concrete or stone bridges these measurements will give a high margin of safety

16 The gradients which are generally practicable are —

[illegible]

For short distances infantry can advance over slopes of 1 in 2 and horsed artillery over slopes of 1 in 7

GENERAL RULES FOR NIGHT MARCHES

17 For a night march the route should be previously reconnoitred both by [illegible]

18 The march should generally be protected by small advanced [illegible] guards usually composed of infantry only flanks are best protected by [illegible]

piquets posted by the advanced guard The distance of these bodies from the columns will vary according to the darkness of the night.

All ranks must know what to do in case of an alarm

these bodies

NOISE

MOVEMENTS OF ARMOURED FIGHTING VEHICLES

22 Whenever circumstances permit, units of A F Vs should march independently of columns or other arms, *e g*, by parallel roads, across country, etc

In the case of armoured cars the maximum endurance capacity is about 10 hours driving, giving a distance of about 200 miles. A normal day's march may be regarded as about 140 miles, or in the case of light tanks about 100 miles.

24. The circuit of action on one fill of petrol is:—

Light tanks Mk. II	80 miles
Medium and close support tanks	100 ,,
Armoured cars—	
Rolls Royce	120 ,,
Crossley	120 ,,

RULES FOR MECHANICAL TRANSPORT

[illegible]

transport

26. When passing dismounted troops motor vehicles will move at as slow [illegible]

27. Loaded vehicles will have the right of way over empty convoys, which [illegible]

Immediate report will be made to section or block commander, who will arrange for remedy if any defect has been discovered.

D 3

Care of Men on the March

Care of Animals on the March

Care of horses

start, may be

Feed *en route* during marches over 5 hours. Remember that horses require a considerable time to consume their rations—not less than 5 hours in 24 should be allowed.

Remove nosebag when horse has done and let him graze if possible.

Opportunities to feed, water and rest men and horses should be found even during the progress of battle.

38 In hot climates horses should be protected from the sun and in cold weather from winds and draughts

Their protection from attack from the air must be constantly considered.

For protective and orderly duties a wise economy in horse flesh can be made by using bicycles or other mechanical means available

Care of Camel Transport on the March

39 When marching with camels the true camel man marches by night, one reason being that it is cooler, and another that no fodder is carried, reliance being placed on grazing which can be taken full advantage of in the day time.

[illegible]

40 Camels will cross fords up to 4 feet deep if the current is not very swift. They are good swimmers but will not take to the water unless forced to do so

41 Six hours at a stretch under load is a good day's march for camels they should not be kept under load more than 8 hours as a general rule

If camels have been well looked after and not overworked an occasional long march can be undertaken without any harm but a succession of marches over 20 miles will soon have bad effects

[illegible]

43 When meeting or being passed by mechanical or other traffic on a road camels should be kept on the move If this is not done the rear camels crowd up level with the leaders and block the road

[illegible]

45 The ordinary pace of camels on suitable ground is 2½ miles per hour Usually this pace should not be exceeded since to do so tires the camel and causes loads to oscillate resulting in galls

When crossing difficult ground each driver must watch his whole string of camels and see that they are not being hurried Normally no driver should be allowed to lead more than three camels

46 If it is necessary to march camels on a broader front than single file, care must be taken that when in line camels are not allowed to close in towards one another If this is allowed loads are apt to knock against each other and become displaced

47 Camels sweat as freely as other animals and must therefore be allowed to cool down before off saddling The interval so caused may well be utilised for watering

15A TIME AND SPACE

1 It may be taken that all troops mounted or dismounted move to starting point at the rate of 100 yards a minute

(i) The average rate of marching for a large body of troops composed of all arms is 2½ miles an hour including short halts. Rates of movement for small bodies of troops in the field are approximately as follows :—

Arm (1)	Yards for each minute (2)	Minutes required to traverse 1 mile (3)	Miles an hour including short halts (4)
INFANTRY—			
Usual pace	100	18	3
MOUNTED TROOPS—			
Walk .	117	15	3½
Trot .	235	8	7
Gallop	440	—	—
Trot and walk	—	—	5

The length of a pace in slow and quick time is 30 inches
" " " stepping out " 33 "
" " " double time " 40 "
" " " stepping short " 21 "
" " " side step " 12 "

A side pace to cover off another man as in forming fours is 24 inches.

(ii) The rates of marching of transport on a level road are :—

Horsed transport	2½ miles an hour
Mule or pony cart, A. T. (2 mules or ponies)	2½ "
Bullock cart, A. T. (2 bullocks)	1½ "
Camel	2½ "
Pack mule or pony	3 "
Pack bullock	2 "
Pack donkey . .	1½ "
Coolie . .	2 "
Motor lorries (solid tyred)	10 "
Motor lorries (pneumatic tyred)	15 "

These rates include short halts only.

(iii) The following shows the number of various types of transport in single file which pass a given point in 10 minutes.

	Escorted	Natural pace (unescorted)
	Miles per hour	Miles per hour
Pack Mules or ponies . . .	183	257
Mules or ponies in draught . .	105	146
Camels	146	146
Bullocks in pack	146	146
Bullocks in draught . . .	62	68

(v) The following are the normal speeds for armoured fighting vehicles, *including short halts* —

Type (1)	On roads (2)	Across country (3)	In the dark: With lights (4)	In the dark: Without lights (5)
Light tanks	12 to 15 m.p.h.	7 to 8 m.p.h.	10 to 12 m.p.h.	5 m.p.h.
Medium and close support tanks	7 to 8 m.p.h.	7 to 8 m.p.h.	7 to 8 m.p.h.	5 m.p.h.
Armoured cars—				
Rolls-Royce	25 m.p.h.		20 m.p.h.	7 m.p.h.
Crossley	20 m.p.h.		20 m.p.h.	7 m.p.h.

In the case of an armoured force composed of light, medium and close support tanks the normal speed of the main body including short halts is :—

By day	*In the dark (without lights)*
7 to 8 m.p.h.	5 m.p.h.

The normal hourly halt for tank units is 15 minutes.

2. Space allowed in column of route for :—

Cavalry or mounted rifles in sections	1 yard for each horse in the ranks.	
Cavalry or mounted rifles in half sections	2 yards " " "	
Infantry in fours	1 yard for 2 men in the ranks.	
Cyclists in half-sections	1½ yards for each man.	
Each pack animal (or pair)	4 yards	Including distances.
" camel	5 "	
" 2 mule or pony vehicle	7 "	
" 1 or 2 horsed vehicle	10 "	
" 4 horsed vehicle	15 "	
" 6 "	20 "	
" 8 "	25 "	
" 2 bullock vehicle (2 wheeled)	10 "	
" 4 " "	15 "	
" 4 bullock vehicle (4 wheeled)	20 "	
motor car van or motor ambulance	6 "	Actual length.
" gun and tractor (Medium Artillery)	20 "	
" gun and tractor (Field Artillery)	13 "	
" bus	10 "	
" lorry or tractor	8 "	
" tank or armoured car	6 "	

3. To prevent minor checks in a column being felt throughout its length the following distances will normally be maintained —

[illegible]	10 yards.
[illegible]	10 "
[illegible]	20 "
[illegible]	30 "

4 For the purpose of calculating road space of mechanically drawn artillery and A F Vs the following average distances between vehicles sub units and units may be taken as normal the distance being measured in each case from the tail of one vehicle to the head of the next —

(i) *Mechanically drawn artillery* —

	Medium	Field
(a) Minimum distances to be maintained *on the move* —		
(1) Between vehicles	20 yards	20 yards
(2) Between sections (or blocks)	25 ,,	25 ,,
(3) Between batteries or brigades	50 ,,	50 ,,
(b) Minimum distances to which vehicles should close up *at the halt* —		
(1) Between vehicles	4 ,,	4 ,,
(2) Between sections (or blocks)	25 ,,	25 ,,

(ii) *Armoured fighting vehicles* —

[illegible]	20 yards
[illegible]	35 ,,
[illegible]	50 ,,
[illegible]	100
[illegible]	200 ,,
[illegible]	15 ,,
[illegible]	60 ,,
[illegible]	60 ,,
[illegible]	150 ,,

(Officers commanding units or column commanders may at their discretion increase distances between vehicles etc according to existing conditions)

At the halt sections will close up on the leading vehicle of the section, the distance between tanks being 1½ lengths

The normal distances in rear of sections and larger units will be maintained [illegible]

When a column is halted the 25 yards between lorries will be reduced to 2 yards but the interval of 50 yards between blocks of 5 vehicles will be maintained to allow of side tracking any passing vehicles when necessary

15B ROAD SPACE TABLES

Certain road space tables for general use are enclosed in the pocket at the beginning of this book (These are subject to amendment from time to time and *care should be taken that corrections are kept up to date*)

16 MOVEMENTS OF TROOPS BY MECHANICAL TRANSPORT.

[illegible]

2 Before ordering a bus move a commander must weigh up the following tactical considerations —

There are few things more visible or better targets to air forces than long columns of lorries or troops engaged in embussing or debussing

ii With infantry equipped with horsed transport a move by mechanical transport over any appreciable distance involves a separation of units from their first line vehicles and therefore from part of their essential fighting requirements

iii The greater the pace of movement the greater will be the distances that can be covered and in consequence the greater the difficulties of communication between the various parts of the force.

3 *Essentials for the movement of troops by mechanical transport* —

i Careful previous arrangements
ii The move must be effected with the same detail and accuracy as a move by rail
iii Close co-operation between the staff the mechanical transport authorities and the troops
iv Selection of suitable roads
v Good discipline of the troops throughout the move

4 Embussing and debussing points should be on straight lengths of broad road with open ground on the rule of the road side and in the case of a debussing point with a suitable assembly ground to which the troops can move without crossing the road

Whenever possible sites for these should be carefully reconnoitred in advance

Villages defiles and bridges must be avoided Mechanical transport should never have to turn round on embussing or debussing points

5 The following require special attention —

i The selection and previous reconnaissance of embussing and, wher [illegible]

iii Unit groups will be told off into parties of 25 to a bus, 20 to a heavy [illegible]

6 The time taken to embus a body of troops will be affected by—

i. The number of vehicles that can be loaded simultaneously.
ii Whether the operation takes place by day or by night

Under favourable conditions it should be possible to embus a battalion, [illegible] that the men [illegible]

(a) By day 12 m p h
(b) By night with headlights 9 m p h
(c) By night, without headlights 6 m p h

7 In the preparation of operation orders for a march involving the movement of troops by mechanical transport, the following points should receive attention —

Order for the move, destination time and date rôle on arrival, composition of groups, road parties (time of start, arrival and route) [illegible] parties and means of transport Protection Medical [illegible] arrangements and equipment.

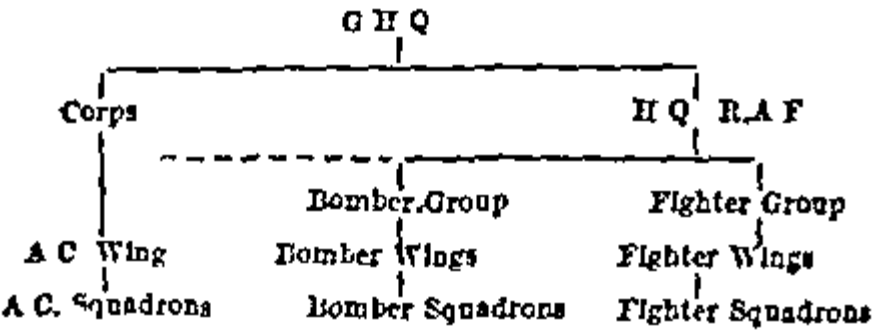
CHAPTER V

AIR FORCE CONTINGENT WORKING WITH A FIELD ARMY.

17 ORGANIZATION, DISTRIBUTION AND COMMAND

1 *Units* —The flying unit in the Royal Air Force is the squadron The types of squadrons which are normally allotted to the air force contingent with an army in the field are —

i Army co operation squadrons
ii Fighter squadrons
iii. Day bomber squadrons



(It will be noted that in the case of an A C W

i The *air* branch which deals with the employment of fighting units and the execution of operations.
ii The *personnel* branch which deals with the administration discipline, reinforcement and evacuation of personnel

(d) The *equipment* branch which deals with the supply and maintenance of all war materials and includes the movement staff, which controls all movements

It will be seen therefore that the air branch corresponds with the general staff the personnel branch with the A G s branch and the equipment branch with the Q.M.G s and M G O s branches of the army staff

The services controlled by the various branches of the staff are similar to those which are controlled by the corresponding branches of the army staff

In the case of the air force contingent working with an army the greater part of the staff work in connection with supply and replenishment is carried out by the administrative staff of the army

5 *Establishments* —

Formation or unit	R A F					From Army (attached)			
	Personnel		Transport			Personnel		Transport	
	Officers	O R	Prime-movers (f)	Trailers	Motor cycles and side-cars	Officers	O R	Vans or lorries	Motor-cycles bicycles
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
H Q R A F	3*	243	15	4	3	(a)			
Fighter Group H Q	4	43	8	3	3				
Bomber Group H Q	4	43	8	3	3	(b)			
Fighter Wing H Q	6	44	9	3	1				
Bomber Wing H Q	6	44	9	3	1	(b)			
A C Wing H Q	7	46	10	3	1	(c)			
Fighter Sqn (1* aircraft)	13	152	17	9	3		(e)		
Bomber Sqn (single engine 1* aircraft)	14	177	19	11	3				
Bomber Sqn. (twin engine 10 aircraft)	2*	*78	27	10	6				
A C. Sqn (12 aircraft)	22	199	23	11	3	(d)			

(a) Includes I O S O 2
(b) Includes intelligence liaison section of one officer (I L O) one c ark and one draughtsman
(c) Includes one wing artillery officer
(d) Includes intelligence liaison section and squadron artillery officer (total 2 officers and 2 other ranks)
(e) The remainder of the army personnel attached include the R A F signal sections provided by the R Signals for each R A F formation and unit for internal communications Their establishments are not yet settled
(f) Under Prime Movers are included all self propelled vehicles e g motor cars lorries R/T tenders, Hucks starters, ambulances etc

Formation or unit	R A F							From Army (attached)			
	Personnel				Transport			Personnel		Transport	
	Officers	B O Rs	I O Rs	Followers	Prime movers	Trailers	Motor-cycles and side cars	Officers	O R	Vans or lorries	Motor-cycles bicycles
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A.C Sqn (India) (12 aircraft)	23	129	22	67	17	20	2	(g)		(h)	

(g) Includes one Intelligence Liaison Officer, one Squadron Artillery Officer and 3 draughtsmen.
(h) For a forward movement twelve vehicles for towing trailers will be loaned from the Army.

18 INTELLIGENCE LIAISON SECTIONS.

1 To expedite the investigation of inform[illegible]

[illegible] task of the intelligence section [illegible]

4 Orders and instructions from military formations are addressed to the squadron commander not to the intelligence liaison section but an extra copy should be supplied for use by the section

19 INTERCOMMUNICATION BETWEEN AIRCRAFT AND THE GROUND

1 Communication between aircraft and the ground is obtained by the following methods :—

[illegible]

[illegible] *picking up*.—This is done by a hook fitted to the aeroplane The message is slung between short poles 4 feet high

6. The responsibilities of the army in connection with intercommunication between aircraft and the ground are as follows —

i. *Close reconnaissance* —The R/T tender allotted to an army formation will come under the command of the signal officer of that formation.

The orders to move and for the siting of the R/T tender when halted will be given by the signal officer concerned, as in the case of army wireless vehicles An army orderly will be provided for the R/T tender to collect the messages received and to take them to the signal office concerned

Three copies of messages will be made out by the R A.F to enable the signal office to pass one direct to the general staff while retaining one for registration purposes in the normal way

This ensures that messages reach the general staff with the least delay

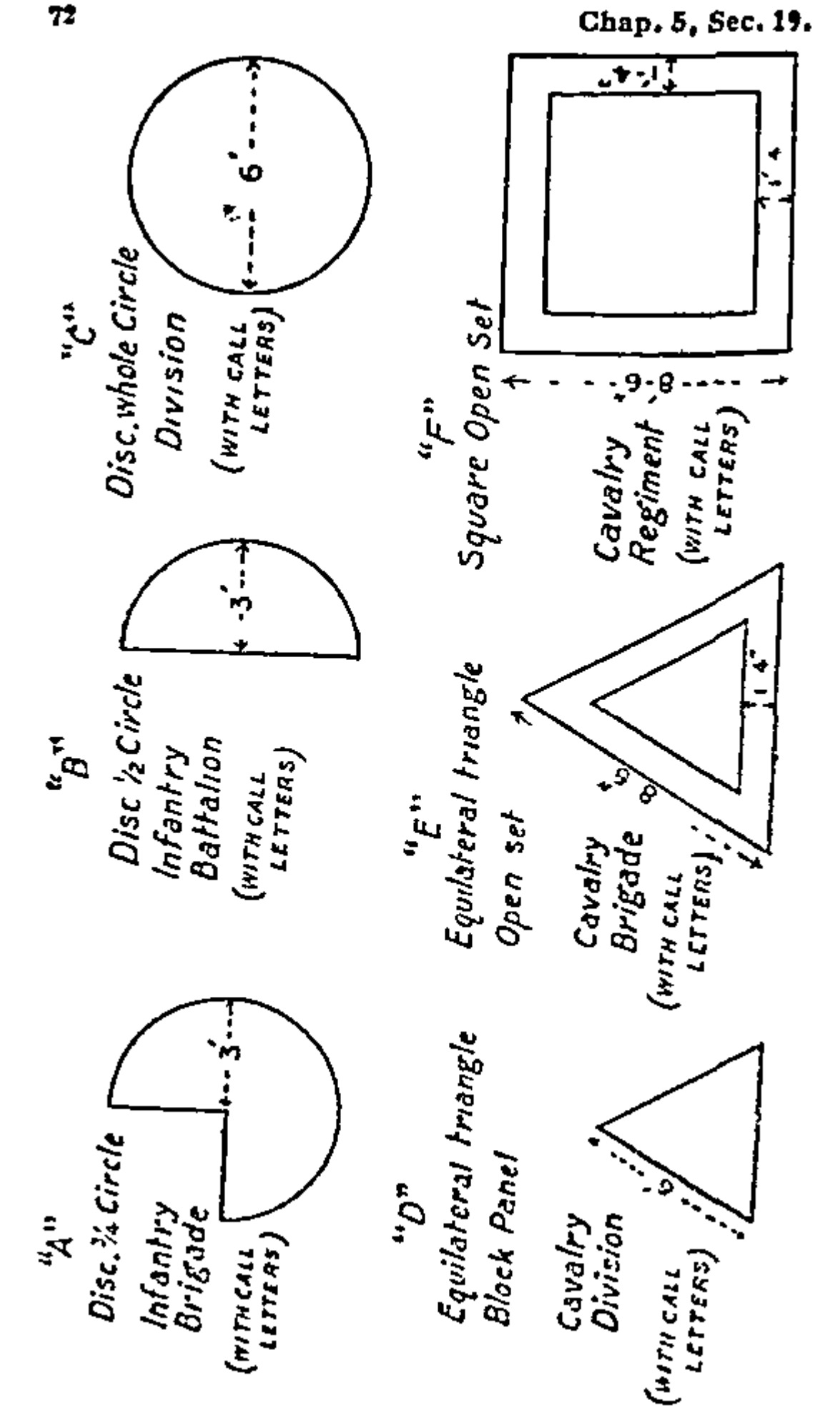
The R Signals are responsible for the collection of messages dropped and the operation of a message picking up station.

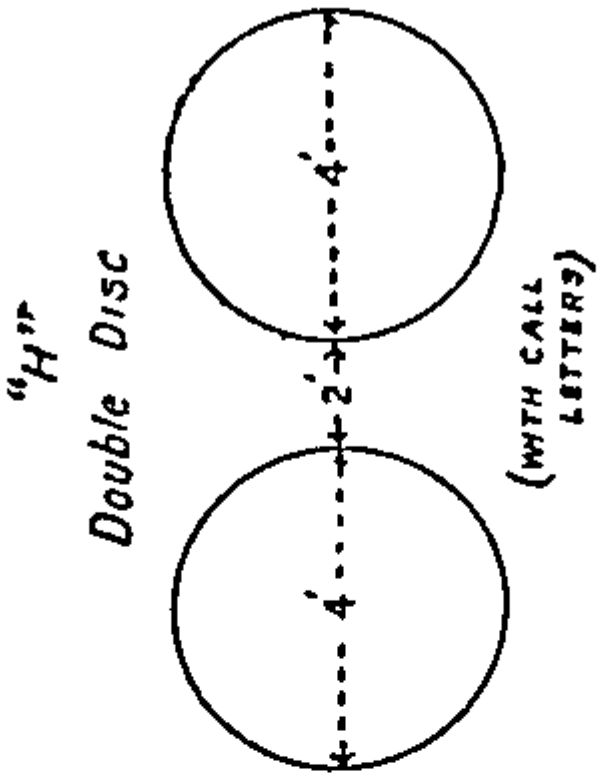
ii *Artillery reconnaissance* —*Artillery commanders are responsible that* instructions are given to their W/T R.A.F operators as to —

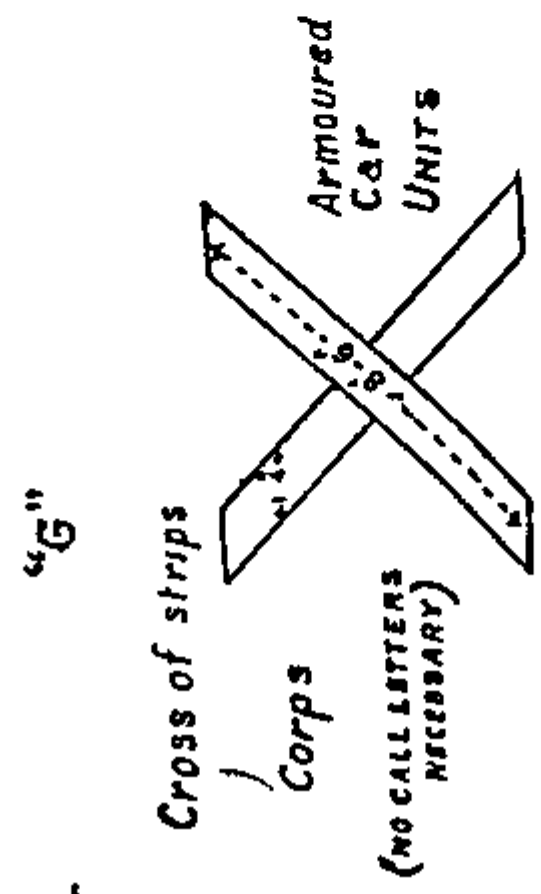
(a) When and where to erect their masts
(b) The frequencies employed by the squadrons in whose area they are operating
(c) The area or station calls which are to be received

As regards ground signals the provision and laying out of the strips is the responsibility of the artillery, R.A F personnel is not provided for the purpose

iii. *Ground indicators and call letters* —The form of ground indicators for the various headquarters is as follows —


"A"
Disc. ¾ Circle
Infantry Brigade
(WITH CALL LETTERS)
3'
"B"
Disc ½ Circle
Infantry Battalion
(WITH CALL LETTERS)
3'
"C"
Disc, whole Circle
Division
(WITH CALL LETTERS)
6'
"D"
Equilateral triangle
Block Panel
Cavalry Division
(WITH CALL LETTERS)
"E"
Equilateral triangle
Open set
Cavalry Brigade
(WITH CALL LETTERS)
4'
"F"
Square Open Set
Cavalry Regiment
(WITH CALL LETTERS)
4'

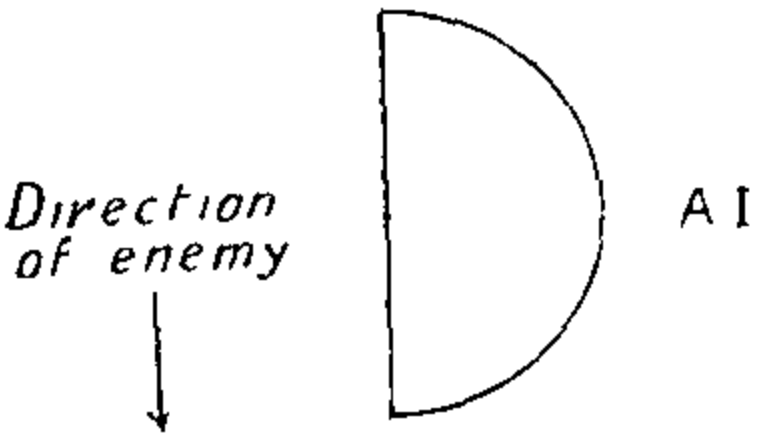

"H"
Double Disc
4'
2'
4'
(WITH CALL LETTERS)


"G"
Cross of strips
Corps
(NO CALL LETTERS NECESSARY)
Armoured Car Units

i. Th[illegible]

In the case of divisions, cavalry divisions cavalry [illegible] call letters will be [illegible]

The following example represents No 3 battalion of a brigade having the call letters AI



Call letters will be allotted in peace by the headquarters of commands and on mobilization by force headquarters Changes in call letters will be made from time to time

[illegible]

"B", "D [illegible] "Q", "R", "S".

iii. Infantry can disclose their positions to close reconnaissance aeroplanes by means of ground strips which are authorised for regiments and battalions on a scale of 2 per platoon and troop for this purpose These will be exposed either,—

(a) When called for by the close reconnaissance aeroplanes, or

(b) at specified hours, or

(c) on [illegible] ing definite objectives.

An aeroplane observer calls for signals from the ground by firing white very lights These ground strips will also be used by piquets to convey the following signals to close reconnaissance aeroplanes —

X All is well with us
T Yes
L No
V (with apex towards enemy) To indicate position of piquet

Owing to their only being 9 ground strips available the letters "V" will have to be displayed and withdrawn before any of the remaining code letters are shown

20 MAINTENANCE OF AIR FORCE UNITS WITH AN ARMY.

1 The army is responsible for the provision of the following stores —

[illegible]

The R A F is responsible for the provision of the following stores —

i [illegible] ammunition and pyrotechnics and all bombs for use in aircraft
ii Technical stores such as aeroplanes photo stores air force special clothing and motor transport

[illegible]

AIR FORCE MAINTENANCE UNITS

[illegible]

i Stores section
ii Aircraft repair section
iii Aircraft engine repair section
iv M T repair section
v Salvage sections

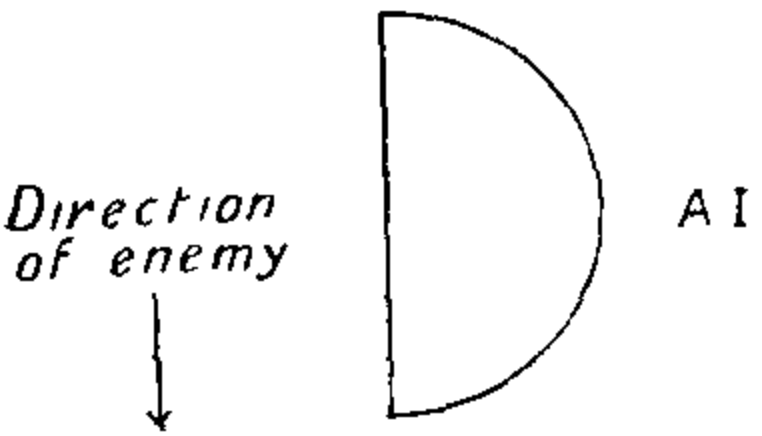
[illegible]

1. Medical arrangements from the time air force personnel are received in army medical units in the field to the base The air force is responsible only for the evacuation of air force casualties to army medical units

i. Th[illegible]

In the case of divisions cavalry divisions cavalry [illegible]

The following example represents No 3 battalion of a brigade having the call letters AI



Call letters will be allotted in peace by the head quarters of commands and on mobilization by force headquarters Changes in call letters will be made from time to time

ii In laying out call letters on the ground the use of the following letters should be avoided where possible owing to the difficulty of forming them accurately with ground strips and the probability of their being misread from the air —

'B', 'D G', "Q', "R' 'S"

iii Infantry can disclose their positions to close reconnaissance aeroplanes by means of ground strips which are authorised for regiments and battalions on a scale of 2 per platoon and troop for this purpose These will be exposed either —

(a) When called for by the close reconnaissance aeroplane, or

(b) at specified hours or

(c) [illegible]ng definite objective

An aeroplane observer calls for signals from the ground by firing white very lights. These ground strips will also be used by piquets to convey the following signals to close reconnaissance aeroplanes —

"X" All is well with us
"T" Yes
"L" No
"V" (with apex towards enemy) To indicate position of piquet

Owing to their only being 2 ground strips available the letters "Y" will have to be displayed and withdrawn before any of the remaining code letters are shown.

20. MAINTENANCE OF AIR FORCE UNITS WITH AN ARMY.

1. The army is responsible for the provision of the following stores :—

i
ii
iii
iv
v
vi
vii

2. The R.A.F. is responsible for the provision of the following stores —

AIR FORCE MAINTENANCE UNITS

4. [illegible]

units —

i. Stores section
ii. Aircraft repair section
iii. Aircraft engine repair section
iv. M.T. repair section
v. Salvage sections

5. *Air stores park.*—An air stores park is solely a mobile distributing unit which acts as an intermediary between squadrons and the aircraft depot or other sources of supply. Stocks held are limited to items necessary at short notice for operations.

7. The army is responsible for carrying out the following services :—

i. Medical arrangements from the time air force personnel are received in army medical units in the field to the base. The air force is responsible only for the evacuation of air force casualties to army medical units.

[illegible]

RECONNAISSANCE

4 [illegible]

5 The officer in charge of the work will then make a detailed reconnaissance of his task The points to be considered in this reconnaissance will include —

i *The work to be done* —Its place nature and quantity The exact posi- [illegible]

iv *Tools and materials* —The nature and quantity required, whence [illegible]

PRELIMINARY ARRANGEMENTS

6 *Tracing*— [illegible]

7 *Estimates*—

(i) Estimates are prepared generally by the officer in charge of the work as a result of the detailed reconnaissance A complete estimate should deal with the following points —

(a) Labour
(b) Time
(c) Tools
(d) Materials
(e) Carrying parties
(f) Transport.
(g) Any other requirements such as guides covering party, etc

[illegible]

8 SPECIMEN OF A WORKING PARTY DEMAND

Working Party Demand Night 22/23 March 1931 "A" Field Company, R E

Serial No. (1)	Date (2)	No. of men (3)	Units providing party (4)	Rendezvous (5)	Time (6)	Gullies (7)	Tools (8)	Task † (9)	Officer in charge of work (10)	Remarks (11)
1	22nd	40		(Map ref) Corner of Ham wood	Hrs 1800	Field Coy Sapper Pick	1 shovel per man 1 pick per two men	Digging communication trench between posts B and C, 4 hours task work	Lt Jones R E	Serial Nos 1 and 4 Officers and N C Os not digging to bring 6-foot sticks marked in feet
2	22nd	30		(Map ref) R. E dump, Guy s Farm	1800	Field Coy, Sapper Screw	*Nil*	Carrying wiring stores to post B, 2 journeys	Lt Jones, R E	
3	22nd	20		(Map ref) Corner of Ham Wood	1900	Field Coy, Sapper Spade	*Nil*	Wiring in front of posts B and C, 4 hours' task work	Lt Jones R E	
4	22nd	40		Do	2359	Field Coy, Sapper Wire	1 shovel per man 1 pick per two men	Digging communication trench between posts B and C, 2nd task, 4 hours' task work	Lt Smith, R E.	

This column will be filled in by the General Staff
te whether task or time work and probable duration
nd site of work

If duty is carrying stores, state number of journeys between

ies—Z..... Z Brigade
1.....C R. E.
1.....O C Field Coy.

Sd ....
O. C. "A" Field Coy.

APPROXIMATE NUMBER OF ENTRENCHING TOOLS CARRIED BY CERTAIN UNITS IN THE FIELD.

Detail. (1)	Divisional Reserve of Tools (a)] (2)	Brigade Reserve of Tools (3)	British Cavalry Regiment (4)	Indian Cavalry Regiment (5)	Battery R. H. A. (6)	Field Battery R. A. (7)	Light or Mountain Battery R. A. (8)	Medium Battery R. A. (9)	Field Troop Sappers and Miners (10)	Field Coy Sappers and Miners (11)	D. H. Q. Coy Sappers and Miners (12)	Army Troops Coy Sappers and Miners (13)	British Infantry Battalion (14)	Indian Infantry Battalion (15)
Axes pick	1 200	32	16	16	20	19	16	18	32	135	27	36	32	32
Axes felling		16	4	4		5		9	12	20	6	8	8	8
Axes hand			4	4					16					
Crowbars		16						6	2	5		2	12	12
Cutters wire	96					4	8	10	8	32	4	17		
Dahs							12			10		27		
Hammers sledge	48								4	10				
Hooks bill					12		8	6	8		5			
Mamooties				4			8							
Mauls	48							6	6					
Sandbags						80	80	120	300	150		250		
Saws crosscut								1	4	14	4	12		
Saws folding							4		2		4	5		
Saws hand					6			4	20	15	9	25		
Stoves	2 400	128	16	16	48	24	16	48	40	135	27	36	64	64
Spades								24						

(a) Stored in Engineer Parks

NOTE.—This table indicates in general terms the number of entrenching tools which will normally be available with the units mentioned it does not purport to be a comprehensive list giving details of all entrenching tools included in the war equipment of units

10 TABLE OF MEN TIME AND TOOLS REQUIRED FOR THE EXECUTION OF CERTAIN FIELD WORKS

NOTE —The tasks given in this table are those which can be expected from "*average trained infantry working parties*" under the following circumstances —

i All tracing and marking out has been done beforehand and the materials are dumped at the site
ii The work is carried out by day or on a clear or a cool moonlight
iii. It is not raining
iv The march to the work does not exceed 1½ hours

Item No (1)	Nature of work (2)	No of workers (3)	Time (4)	Quantity (5)	Task per man per hour (6)	Tools for party (7)	Remarks (8)
	EARTHWORK						
1	Execution of trenches— (a) In soft sandy ground.	1 1	1 hour 4 hours	30 cu ft 90 cu ft	30 cu ft	1 pick and 1 shovel 1 pick and 1 shovel	i The tasks given in col 5 allow for the earth being thrown out of a trench 4 ft deep to a distance of 8 ft or for throwing earth upwards to a height of 6 ft When the earth has to be thrown further than this one shoveller should be added for every diggers.

10 TABLE OF MEN, TIME AND TOOLS REQUIRED FOR THE EXECUTION OF CERTAIN FIELD WORKS—*contd.*

(Item No (1)	Nature of work. (2)	No of workers (3)	Time (4)	Quantity (5)	Task per man per hour (6)	Tools for party (7)	Remarks. (8)
	EARTHWORK—*contd* Execution of trenches—*contd*						
	(b) In medium ground or soft ground with stones or small roots	1 1	1 hour 4 hours	20 cu ft 60 cu ft.	20 cu ft	1 pick and 1 shovel 1 pick and 1 shovel	ii When the depth of the trench is more than 4 ft 1 shoveller should be added for every 2 diggers, to clear the berms and to make up the parapet and parados to the correct shape
	(c) In hard ground or medium soil with stones and roots	1 1	1 hour 4 hours	15 cu ft 40 cu ft	15 cu ft	1 pick and 1 shovel 1 pick and 1 shovel	iii Picks to clean shovels in wet clay Crowbars for rocky ground Hand axes or billhooks for cutting roots Spare pick handles, etc, must be provided
3	Shovelling earth ready excavated	1 1	1 hour 4 hours	40 cu ft 120 cu ft	40 cu ft	1 shovel ..	iv Allows for 10 ft horizontal throw
3	Excavating earth and loading into wheel barrows, stretchers, or baskets.	1		As under Serial No 1			v Spare wheel barrows, etc, must be available, so that the digger can fill

						one while the carrier is emptying the other. Sufficient wheel barrow stretcher or basket men must be allowed so that diggers are not kept waiting
4	Moving earth 25 yds., depositing it and returning—					
	(a) In wheel barrows	1	2 mins	1 cu ft	30 cu ft	2 wheel barrows
	(b) In baskets	1	2 mins	½ cu ft	10 cu ft	2 baskets
	(c) In sandbags (see below)	1	4 hours	40 cu ft	10 cu ft	2 baskets
						vi Planks are required to make roads for wheel barrows vii Wheelbarrows cannot climb a steeper slope than ⅓, or baskets and stretchers a steeper slope than ¼
	REVETMENTS					
	Sandbag revetment— (a) Filling sandbags	3	1 min	1 bag	20 bags	1 shovel
	(b) Carrying sandbags 25 yds., dumping and returning	1	2 mins	1 bag holding ½ cu. ft. of earth.	30 bags	

viii Two men holding and tying, one man shovelling
Sandbags to be three quarters filled (holding ½ cu. ft.)

10. TABLE OF MEN, WIRE AND TOOLS REQUIRED FOR THE EXECUTION OF CERTAIN FIELD WORKS—*contd.*

Item No (1)	Nature of work. (2)	No of workers. (3)	Time. (4)	Quantity (5)	Task per man per hour (6)	Tools for party (7)	Remarks. (8)
5	REVETMENTS—*contd* Sandbag revetment—*contd* (c) Building sandbag revetment.	2	2 mins	1 sq. ft. of revetment i.e., 3 filled bags	15 sq ft = 45 bags	1 beater	ix Builders work in pairs when possible
6	Sheeting and picket revetment.	10	10 mins.	10 ft. run		2 mauls, or sledge-hammers 2 shovels 1 pick 1 handsaw 1 handaxe, or dah 1 pair pliers 1 crowbar (in rocky soil)	x Distribution of working party :— 2 men driving anchorage pickets 2 men driving revetment pickets 2 men placing sheeting. 2 men wiring pickets 2 men trimming and filling
7	Sheeting and "A" frames	7	30 mins	10 ft run of trench		2 picks 2 shovels 2 mauls 1 handsaw 1 hammer, nails	xi The time given does not include digging out the trench to full section In fully developed fire trench (Fig 9) allow time and tools for digging out 4 cu

							ft per foot-run of trench. xii 1 or each corner *add* 15 minutes to time required for revetting the trench xiii Distribution of parties — 2 men supply materials 3 men placing frame and sheeting 2 men trimming and packing
8	Laying trench boards on "A" frames	3	10 mins.	10 ft run of trench.		1 saw 1 hammer, nails	xiv *Add* 10 minutes for each corner xv 2 men laying and fitting 1 man supplying material
9	Picket trestles and laying trench boards on same	5	10 mins.	6 ft run of trench boarding		1 maul 2 handsaws 2 hammers, nails	xvi Trestles at 3 ft intervals
	Making brushwood hurdles	3	20 mins.	1 hurdle		2 bill hooks or handaxes 1 pair of pliers	
	Making fascines	4	1 hour	1 fascine		3 billhooks or handaxes. 1 handsaw 2 knives 1 pair of pliers 1 maul 1 fascine choker	

10 TABLE OF MEN, TIME AND TOOLS REQUIRED FOR THE EXECUTION OF CERTAIN FIELD WORKS—*contd.*

Item No (1)	Nature of work. (2)	No of workers (3)	Time (4)	Quantity (5)	Task per man per hour (6)	Tools for party (7)	Remarks (8)
12	REVETMENTS—*contd* Felling trees	1	1 min	1 in of diameter of tree up to 12 in If over 12 in diameter allow time in minutes $= \frac{d^2}{144}$ where d = mean diameter in inches		1 fellingaxe or handsaw	xvii If only hand axes are available the time should be doubled.
13	Cutting brushwood	1	1 hour	25 sq yds.		1 handaxe or billhook	xviii Diameter up to 2½ in
14	Loopholing 1 rick walls— Making loopholes in brick walls up to 18 in thick	1	30 mins	1 loophole	2 loopholes	1 pick or 1 crowbar	xix *Add* 50 per cent. to the time if in cement mortar A mason's hammer and chisel are the best for this work.
15	Making notches in a wall up to 18 in thick.	1	10 mins	1 notch	5 notches	1 pick or 1 crowbar	

16	Wire obstacles— Making concertinas	3	20 mins	1 concertina		9 long pickets 1 sledge hammer 1 frame for head of pickets 1 pair of pliers 1 windlass stick	xx The stores required for one concertina are — 1 coil of barbed wire (130 yds) 18 yds No 12 binding wire (or 36 yds of No 14) 50 ft thin binding wire cut in 4 in lengths Two 5 ft laths or bamboos String
17	Double belt of concertinas	1 N C O and 7 men	Day— 70 mins Night— 30 35 mins	50 yds		1 pair of pliers 7 windlass sticks	xxi Stores for 50 yds of double belt are — 34 long pickets 4 anchorage pickets 16 concertinas 2 coils of 130 yds of barbed wire.
	Making coils of loose wire	2	5 mins	1 coil of loose wire		4 3 ft pickets 1 maul 1 pair of pliers	xxii The stores required for 1 coil of loose wire sufficient for a bay of 2 yds wide and 25 yds long are — 1 coil of 130 yds of barbed wire. String

10 TABLE OF MEN TIME AND TOOLS REQUIRED FOR THE EXECUTION OF CERTAIN FIELD WORKS—*concld*

Item No (1)	Nature of work (2)	No of *workers* (3)	Time (4)	Quantity (5)	Task per man per *hour* (6)	Tools for *party* (7)	Remarks (8)
	Wire obstacles—*contd*						
19	Double belt of "French" wire	1 N C O and 7 men	Day— 15 mins Night— 20-30 mins	50 yds		1 pair of pliers 7 windlass sticks	xxiii The stores for 50 yds of double belt with loose wire between belts are — 26 long pickets. 4 short pickets 6 coils of "French" wire 3 coils of 130 yds barbed wire. 2 coils of "loose" wire 24 staples
20	Standard double apron fence	1 N C O and 10 men	Day— 30 mins Night— 45 60 mins	50 yds.	10 yds	1 pair of pliers 10 windlass sticks Gloves if desired	xxiv Stores for 50 yds of double apron fence are — 20 long pickets 40 short pickets 9 (65 yds) coils of barbed wire 2 (130 yds) coils of barbed wire (for diagonals) (For rapid work 18 coils of 65 yds of wire can be used)

21	Wire tree-entanglement in thick undergrowth	8	20 mins	50 yds		2 billhooks or 1 x axes 2 pairs of pliers 5 50 yd coils of barbed wire	

23. DESIGN OF PROTECTIVE WORKS.

1 The three main principles governing the design of protective work are :—

i The work must permit the effective use of the defenders' weapons.
ii The work must provide protection from the enemy's weapons
iii The work must be inconspicuous

USE OF WEAPONS—RULING DIMENSIONS

2. *The rifle*—*A man can fire his rifle over the following heights* —

Detail. (1)	Fires over (2)	Distance needed behind (3)	Remarks. (4)
i Lying	9 to 12 in	5 ft	Man not covered from view, cannot move about. Badly exposed to shrapnel fire
ii. Kneeling or sitting	30 in	3 ft	Man cannot sit under cover, and can only move with difficulty without exposure
iii Standing	4 ft 6 in	2 ft	Man can sit and crawl without exposure, extra width needed for easy movement

3 *Other weapons*—The maximum heights over which other weapons can fire is shown below —

i Light automatic As for rifle
ii Machine-gun or tripod mounting (Firer in sitting position) 24 in
iii. 18-pr field gun 30 in
iv 4 5 in howitzer 30 in

[illegible]

Material (1)	Penetration in inches (2)	Minimum thickness in inches to be provided (3)	Remarks. (4)
Steel plate	¾	1	
Shingle or small broken stone	6	9	

Material. (1)	Penetration in inches (2)	Minimum thickness in inches to be provided (3)	Remarks. (4)
Coal (hard)	9	13	Between boards.
Coal (kitchen)	15	23	Between boards
Brickwork in lime mortar	14	21	
Chalk	15	22	
Sand confined between boards or in sand bags	18	27	
Sand loose	30	45	
Earth, free from stones unrammed	40	60	Ramming earth reduces its resisting power
Sawn timber hard wood e g oak	38	5[illegible]	In round timber the penetration is much less than in scantling owing to the deflection of the bullet, but care must be taken to fill the interstices
Soft wood e g fir	56	84	
Freshly-cut timber logs 12 in diam and over	24	36	
Poles 4½ to 8 in in diameter	38	57	
Clay	60	90	Varies greatly This is maximum for greasy clay
Dry turf or peat	80	120	Varies greatly Soft
Snow	(Rammed snow)	60	snow has little power of resistance

5 *Shrapnel* The bullets come down at a steep angle and have very little power of penetration

A brick wall 9 in thick a bank of earth 18 in thick, or the roof or floor of a good building will be sufficient to stop them

[illegible] they [illegible] —These burst after penetrating [illegible] against [illegible] than [illegible]

8 The effect of direct hits by these shells is limited by —

i Avoiding long straight lengths of trench or work
ii. Providing traverses
iii Holding up the sides of trenches by revetment.

24A DEFENCE OF A POSITION

1 *Priority of work in preparing a defensive position* —A comprehensive scheme of development must be planned from which a priority list of work to be done must be drawn up

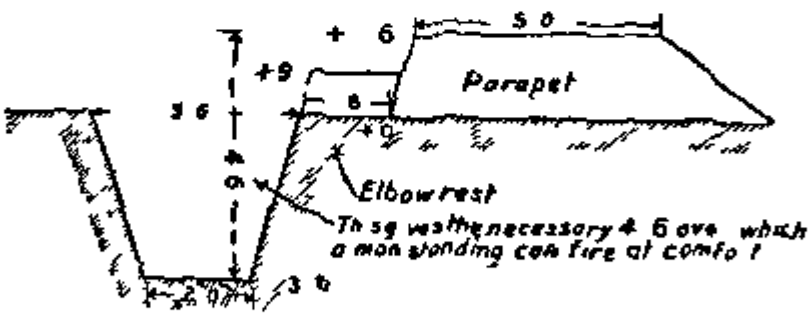
The following order of priority may be taken as a general guide —

i. *Siting of weapons and O Ps*
ii *Improving communications*
iii *Clearing and improving the field of fire*
iv *Digging fire positions constructing machine-gun positions and observation posts*
v *Creating obstacles*
vi *Completing the fire positions and connecting them up*
vii *Completing the communication or connecting trenches*

and can be enlarged as shown in fig 9

FIG 8

WEAPON PIT
(RIFLE OR L.A)



N.B —Normally the weapon pit will be 6 in length, to accommodate 2 men.

FIG 9

NORMAL SECTION OF FIRE TRENCH
Order of work

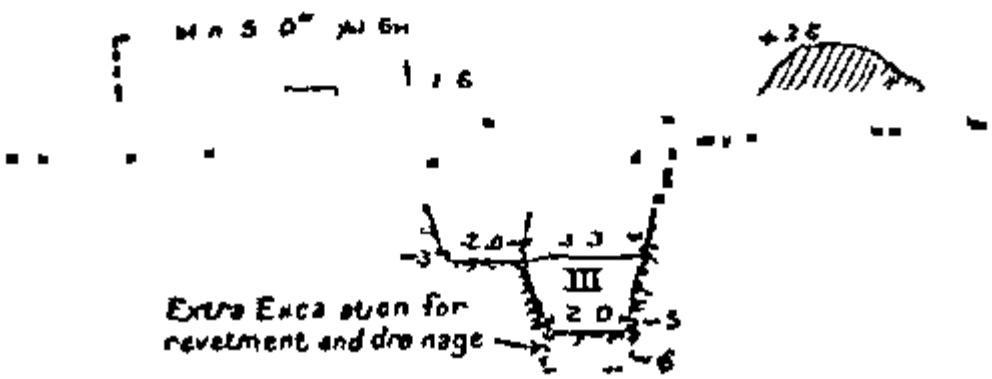
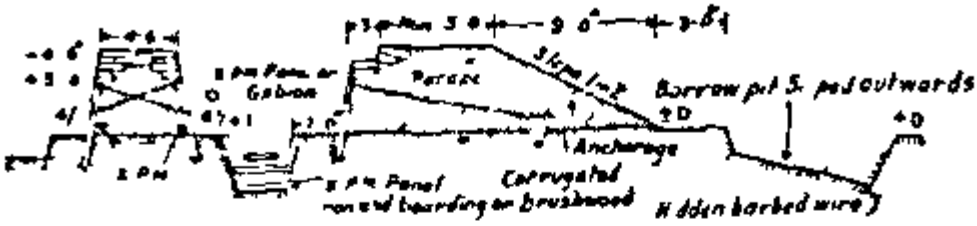


FIG 10

SECTION OF BREASTWORK IN WET SOIL



NOTE —Depth of bottom to vary according to ground Set frames as low as possible to save breastwork Drainage at grade of 1/50 to lower ground essential

ii. *Drainage* —If trenches are not drained they will in wet weather become uninhabitable

iii

iv

purpose

8 *Machine-gun emplacements* —

i. Concealment from the air is of great importance Machine gun positions should be included in the general scheme of section posts whenever possible Alternative and dummy positions should be made early

ii A type of battery emplacement which can be easily and quickly made is shown in Plate VII.

13 MINIMUM DIMENSIONS OF OPEN M G EMPLACEMENT.

FIG 11

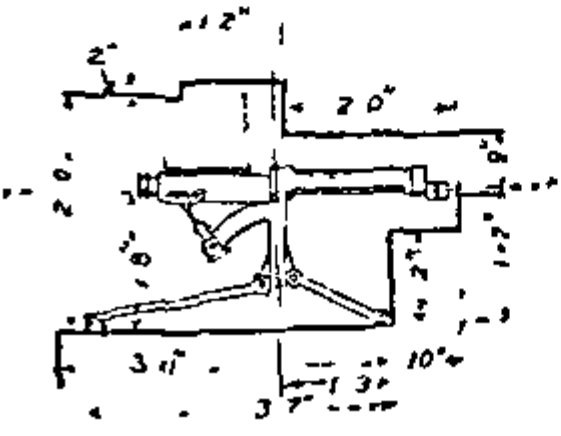


FIG 12

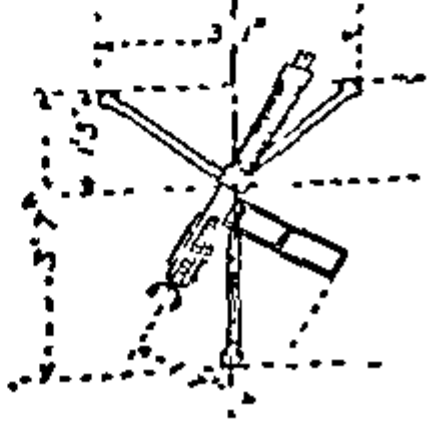
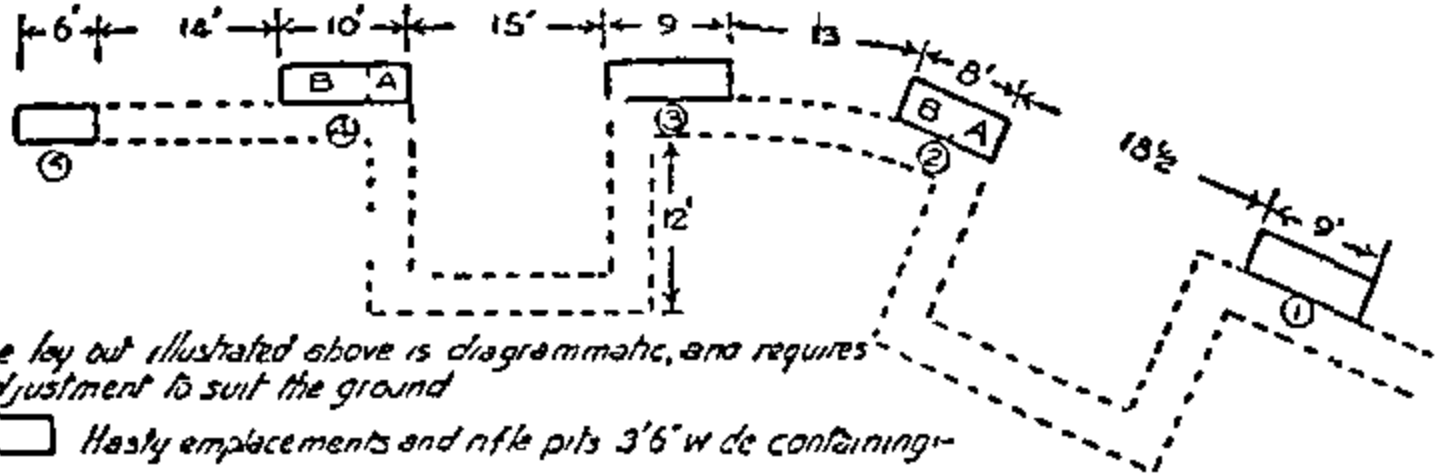


PLATE VI.

WEAPON PITS FOR A M G. SECTION.



The lay out illustrated above is diagrammatic, and requires adjustment to suit the ground

Hasty emplacements and rifle pits 3'6" wide containing:-

① 3 Men

② 1 gun and 2 nos

③ Sec Comdr range-taker and orderly

④ 1 gun and 3 nos

⑤ Sec Cpl and 1 man

The dotted lines show a method of joining up the pits for inter communication. The portion of the original pit marked A is subsequently dug away to allow No 2 to stand in it. When not in use this short length of trench should be concealed from the air (See Sec 45 4.) The portion marked B remains as the platform, after the trench behind it is dug to allow No 1 to stand

SECTION THROUGH M G PIT AT B

Showing in dotted lines the trench dug behind the platform in which No 1 Stands

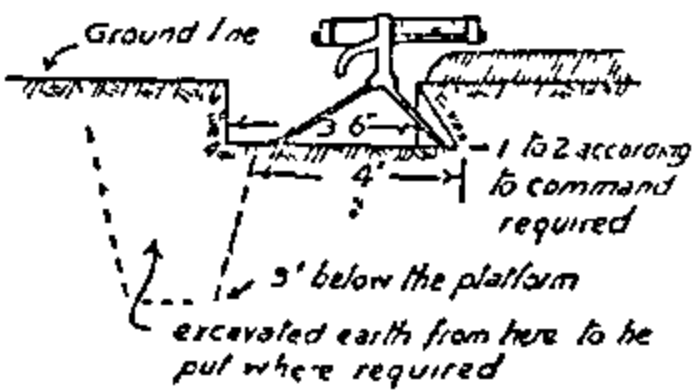
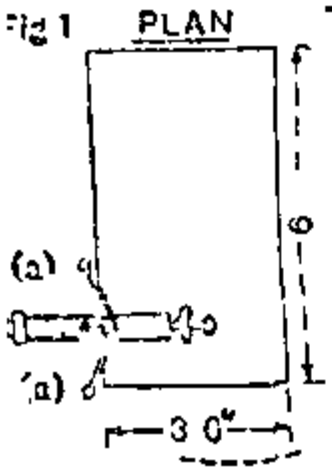


PLATE VII

HASTY M G EMPLACEMENTS

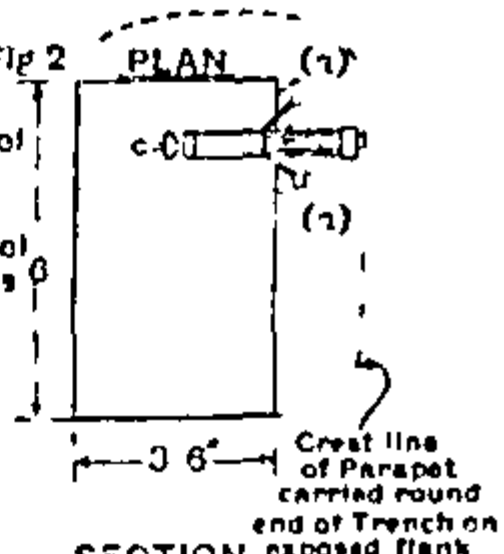
Time Factors, Earthwork only, in average easy soil no revetment executed at night.



One man 1 Pick 1 Shovel = 2 hours.

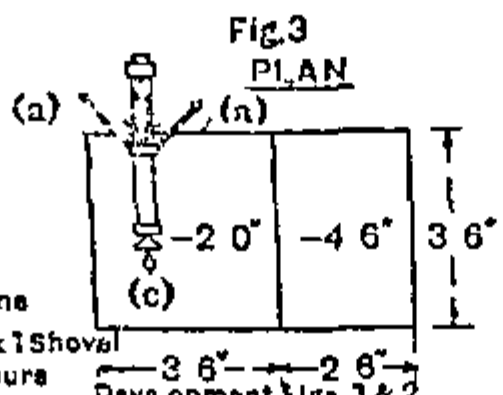
Two men 1 Pick 1 Shovel 1½ hours

Crest line of Parados carried round end of Trench on exposed flank



One man 1 Pick 1 Shovel = 1 hour

Two men 1 Pick 1 Shovel = 40 mins



Total Time

One man 1 Pick 1 Shovel = 5 hours

Two men 1 Pick 1 Shovel = hours

(a) *Slight undercut can be revetted with wooden Slats from Ammunition Box for each leg*
(b) *Gun mounted in highest position*
(c) *2" is Maximum depth to enable No 1 to fire in sitting position*
Fig 3 shows normal development of Figs 1 and 2 when time permits

iii. The tripod leg should be cut well into the bank or parapet so that overhead cover if added will not break the continuity of the parapet or bank thus giving an appearance as identical as possible with a rifle trench when viewed from the air

iv. The platform should be revetted as early as possible When the ground is soft a 'T' base should be used on the platform.

v When time permits hasty emplacements may be developed as in Plate VI

4 *Protective works for artillery*—

i *Choice of position* —Concealment is of great importance

Avoid a position near any natural feature which may facilitate enemy air observers ranging a hostile battery

Hidden approaches to the battery are essential as wheel tracks give away the position

If overhead screens and netting are provided for purposes of concealment they should be placed in position before the guns

ii Protective works —In positions which are to be occupied for a short [illegible]

iii Covers should be erected over the site of the work before any digging is done, if practicable

5 *Observation posts* —Essentials are —

(i) An uninterrupted view of the zone over which observation is required

(ii) Concealment Natural cover will, therefore, be used wherever possible

A sketch of an observation post which can be made in about four hours by eight men, is given in Plate IX

6 *Light shelters*—

i Small shelters to give protection against shrapnel and splinters (see Plate X) any thickness greater than 2 ft 6 in only increases the explosive force of the shell which may penetrate it

The following covers are effective against shrapnel —

(a) 12 in to 1 ft 9 in of earth with bursting course 9 in thick of broken brick supported on C I sheets hurdles or planks, resting on a wooden frame

(b) 2½ feet of earth supported on a layer of 8 in logs resting on a wooden frame

7. *Shell slits*—

i Slit trenches shown in Plate XI, are useful to give protection from shelling and aeroplane bombs

ii They should be about 3 ft wide at the top and 4 feet deep They are usually dug at right-angles to communication trenches and on each side of them The slits should be made zig zag in plan and each should be long enough to take 10 or 12 men or about 25 to 30 ft in length.

iii They should be shored or strutted (Plate XI) as early as possible to prevent collapse and steps for egress should be provided at the end away from the communication trenches.

iv They should be drained.

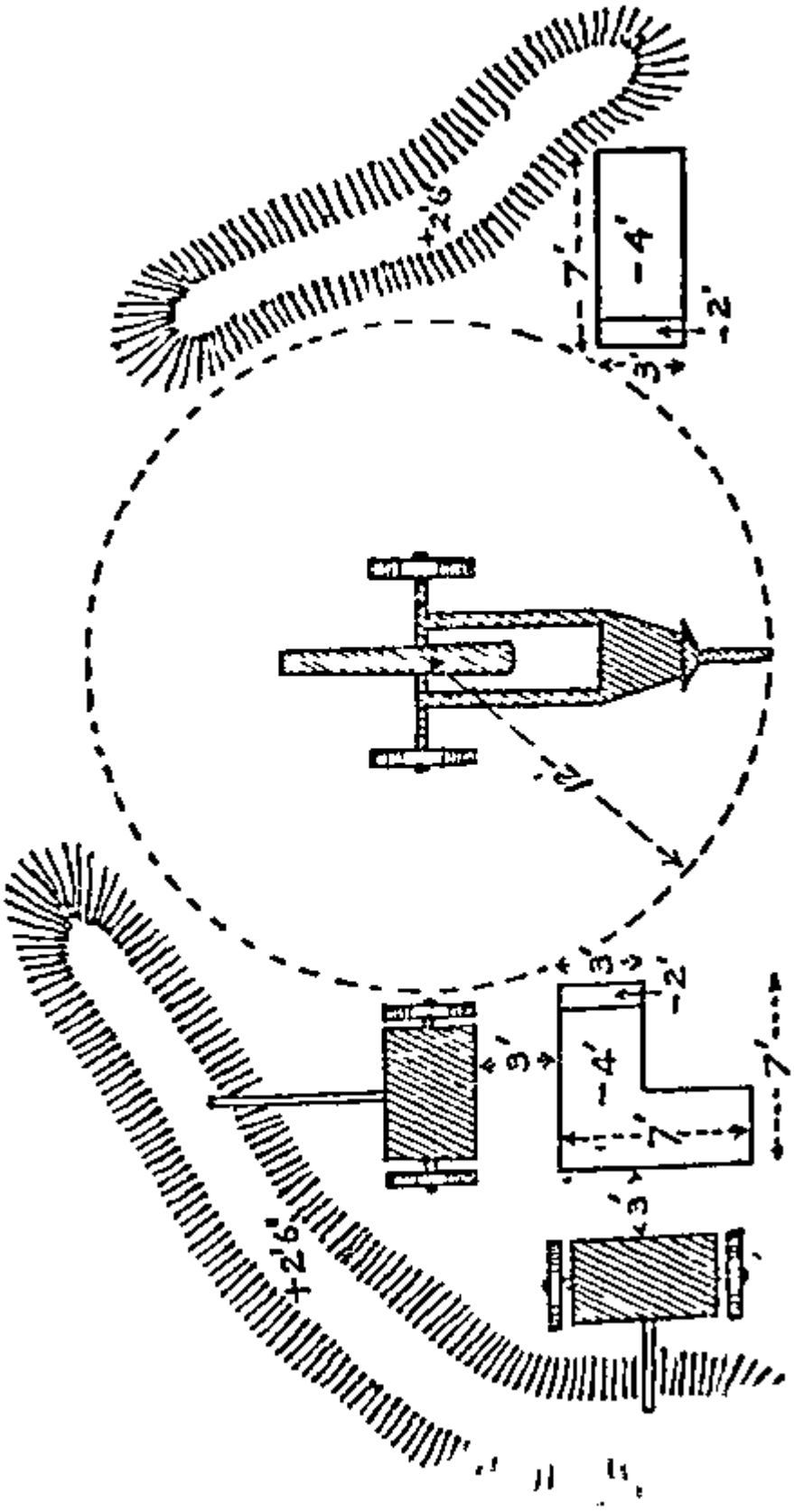
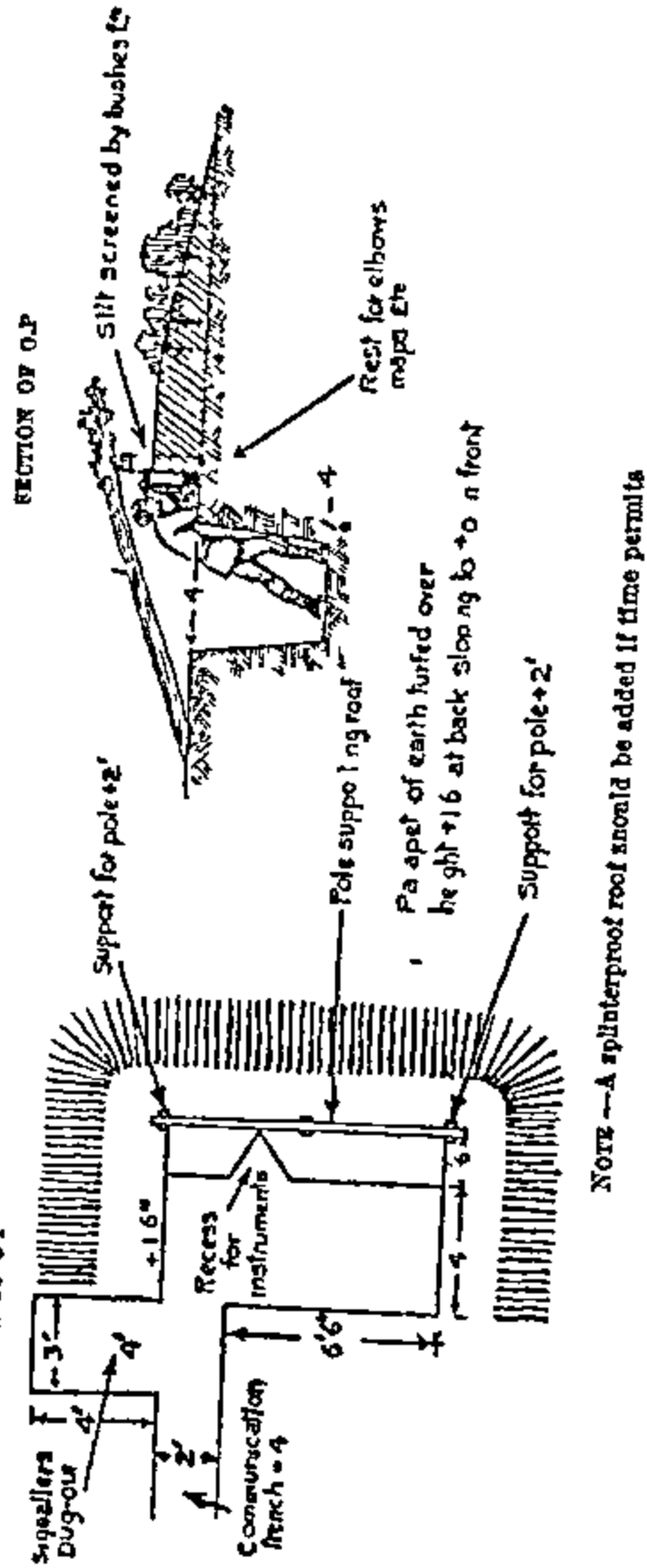


PLATE VIII.
EPAULMENT FOR FIELD GUN.

PLATE IX.

OBSERVATION POST



NOTE.—A splinterproof roof should be added if time permits

PLATE X.

SIMPLE SHELTER OF GI AND LIGHT TIMBER FRAMING

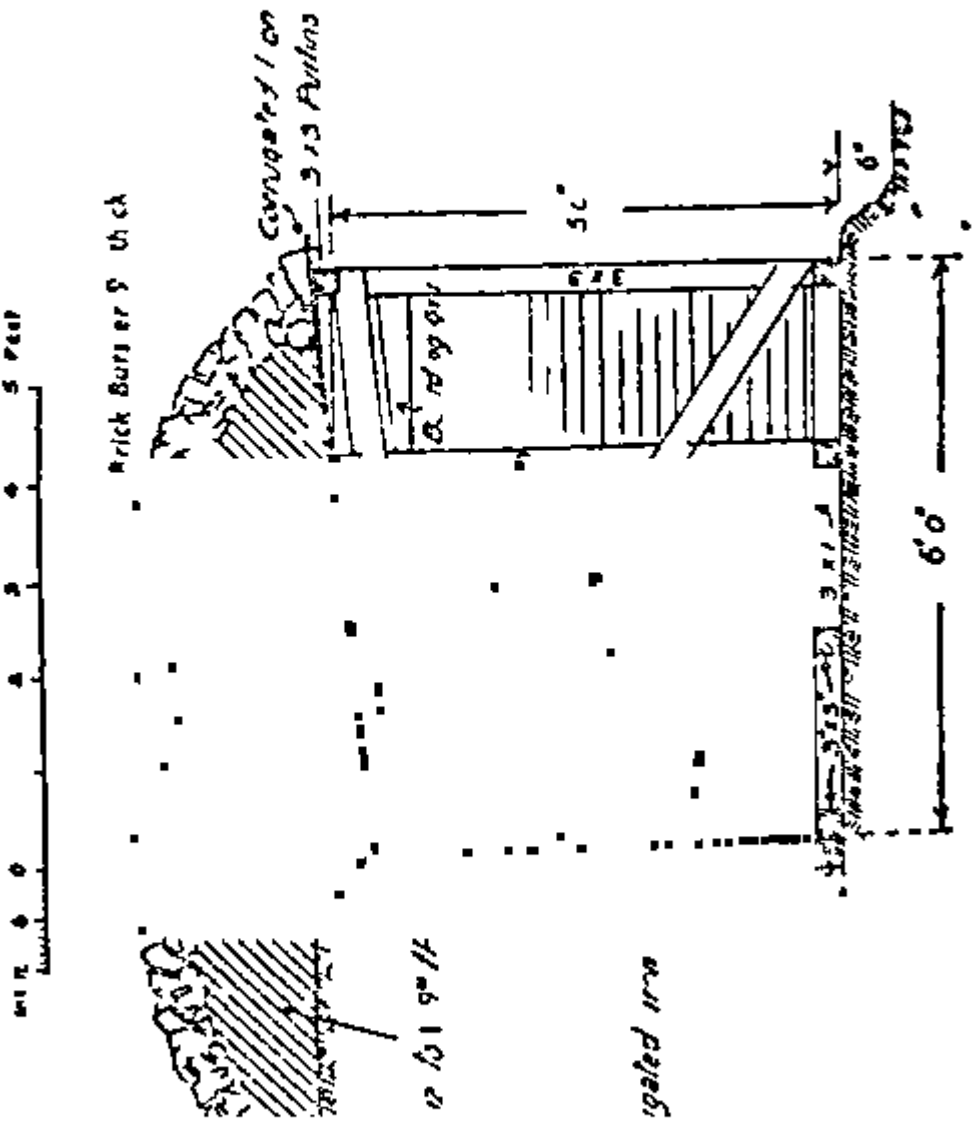
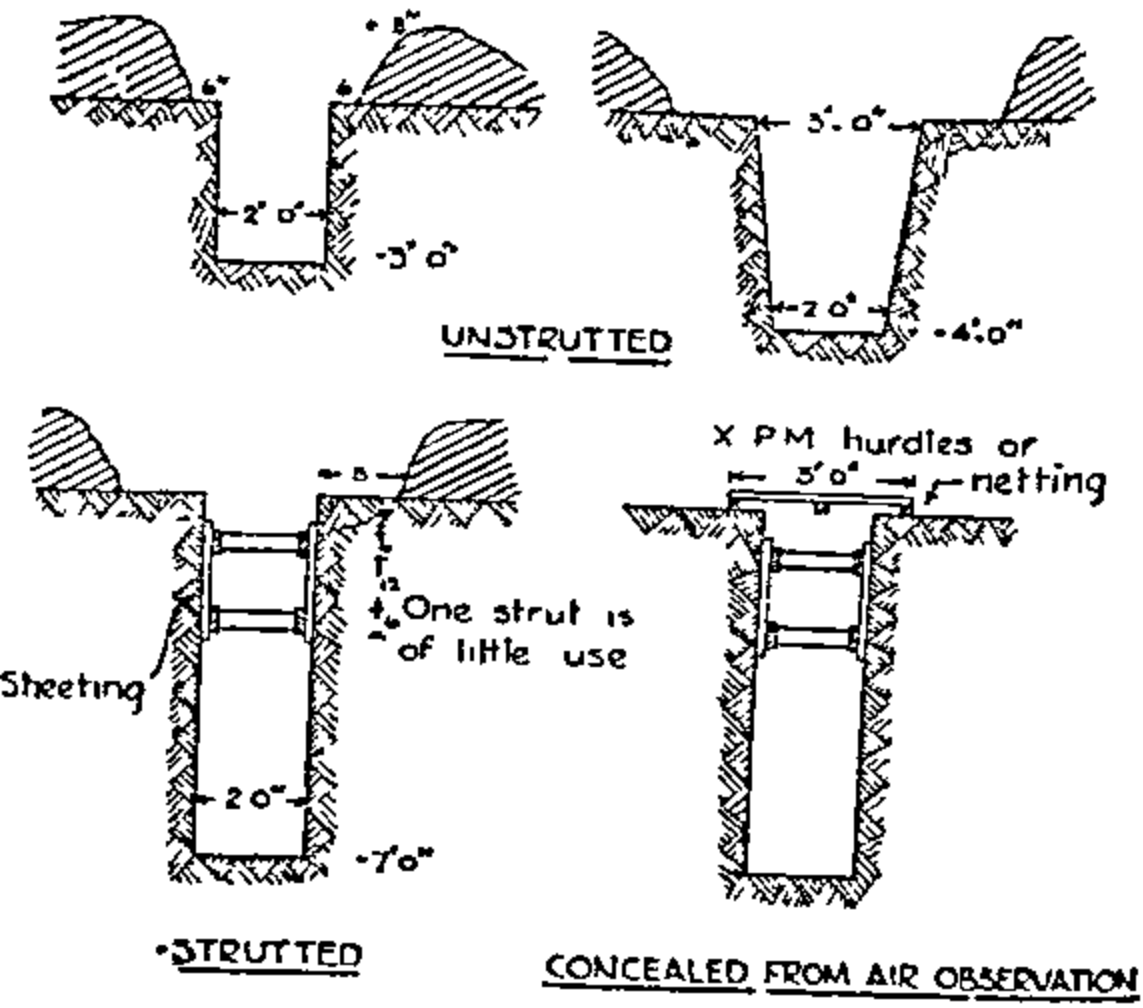


PLATE XI

SHELL SLITS.

TO GIVE QUICK IMPPOVISED SHELTER



MISCELLANEOUS PROTECTIVE WORKS

8 *Defence of Buildings*

1 *General* —Strong well built buildings may [illegible]

(ii) *Loopholes* [illegible]

9 *Cellars*

(i) The first *essential is* to shore up the roof with stout posts [illegible]

(iv) Shell proof protection In well built houses existing walls or roofs act as bursters and as these are knocked down the covering of the cellar is automatically increased

10 *Hedges*

[illegible]

11 *Walls*

Walls should be loopholed A roof may be required for protection against falling bricks

12 *Embankments and cuttings*

1 Fire positions can be made in embankments and cuttings by digging T heads or D heads [illegible]

13 *Defence against gas*

The entrances to all shelters should be provided with gas tight doors or with curtains or [illegible] curtains are used with a centre [illegible]

PLATE XII

GAS PROOF CURTAIN

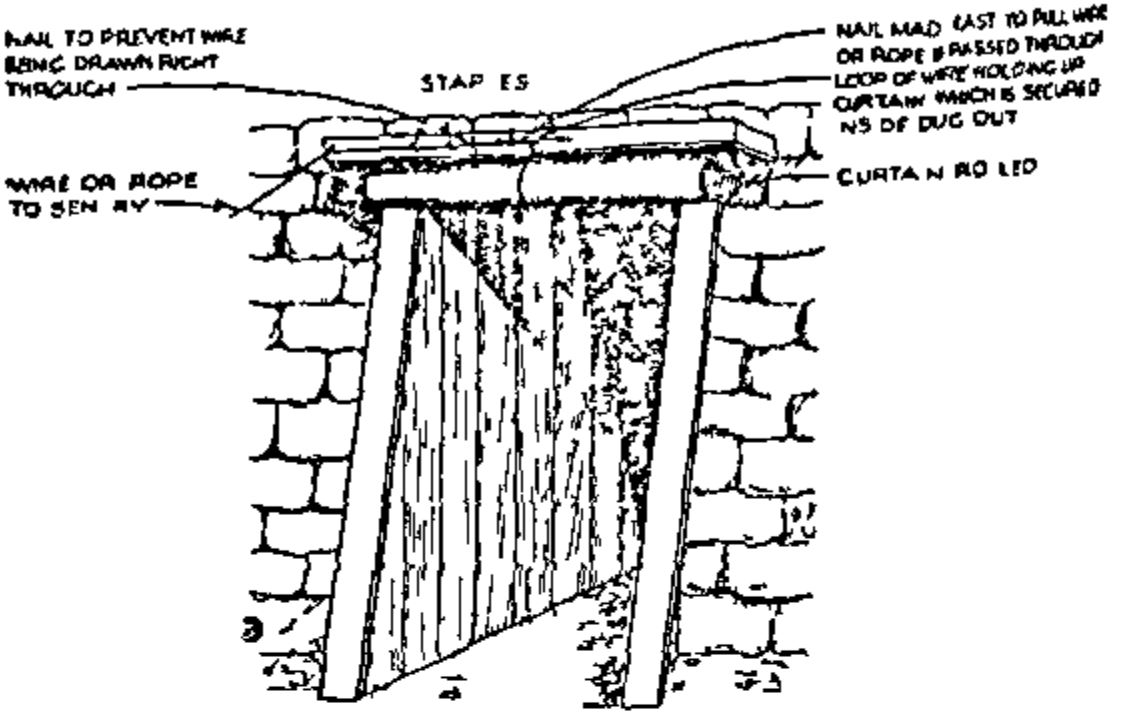


FIG 1 —OPEN

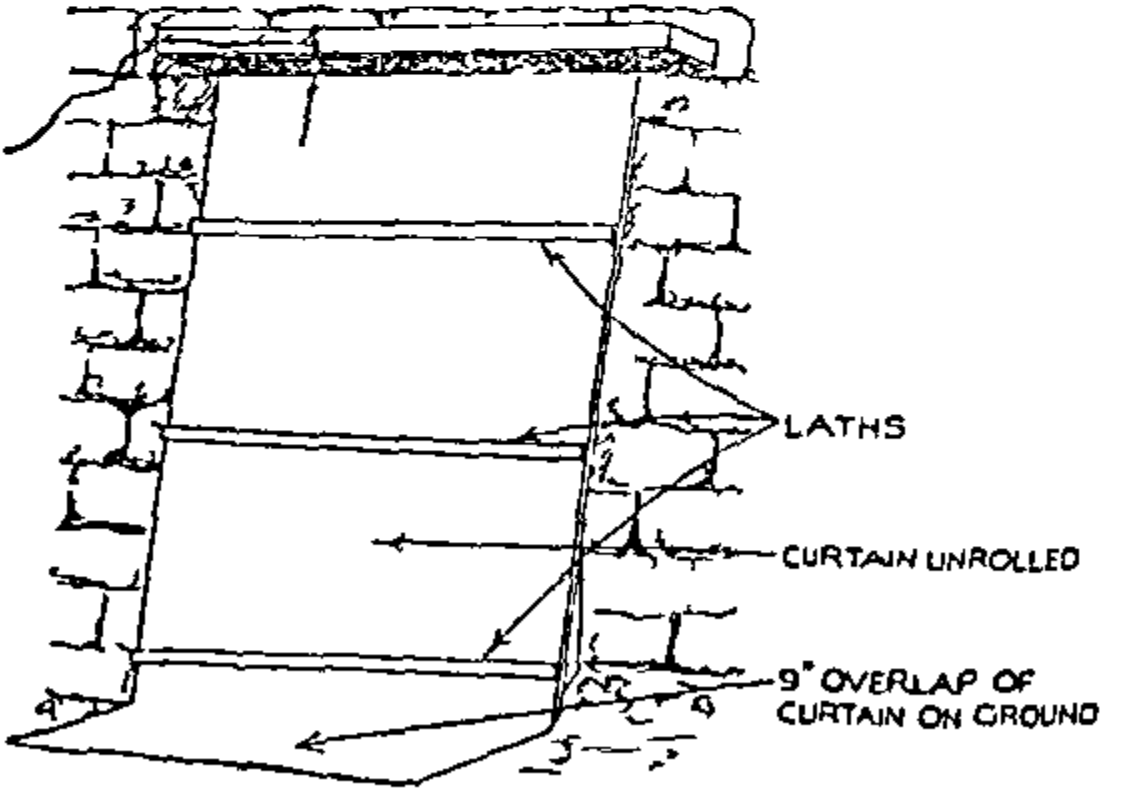


FIG 2 —CLOSED AFTER THE SENTRY HAS PULLED THE WIRE OR ROPE

NOTE —The laths should be fastened in pairs one on the front and one on the back of the curtain Those on the back should be shorter than those on the front to allow for the curtain lying close against the wooden frame

24B DEFENCES IN MOUNTAIN WARFARE

1. *General* —The following paragraphs deal with defences against an enemy unprovided with Artillery and armed only with rifles and possibly hand grenades and machine guns, such as tribes on the North West Frontier of India.

2. As such country is usually rocky the most suitable cover is a Sangar. It may sometimes be quicker to dig in order to get some of the height required for fire in the standing position.

3. Sangars (See Plate XIII) must be carefully built of the largest stones [illegible] the wall, if it is to be 4' 6" high should be 3' to 3' 6" broad at the bottom, and the sides should be nearly vertical [illegible]

4. *Obstacles* —Obstacles should be provided whenever possible. Even [illegible]

PLATE XIII

TO BUILD THE WALLS OF SANGARS

FIG 1 Foundations

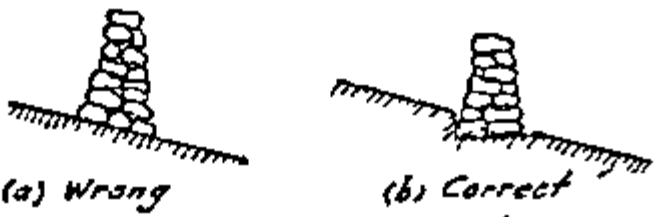


FIG 2 Foundations

FIG 3 Joints not to overlap

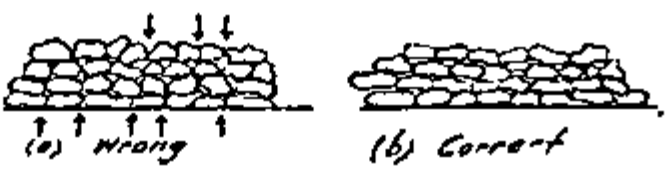


FIG 4

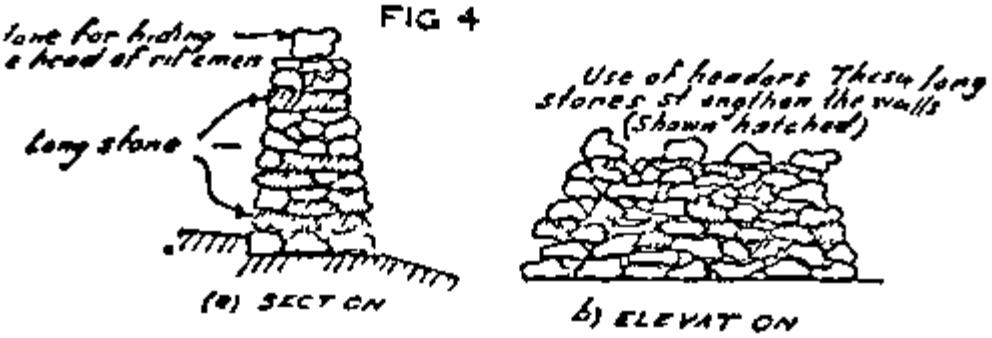


PLATE XIV

SAMPLES OF SANGARS

(a) Temporary round sangar for picket of 20 riflemen

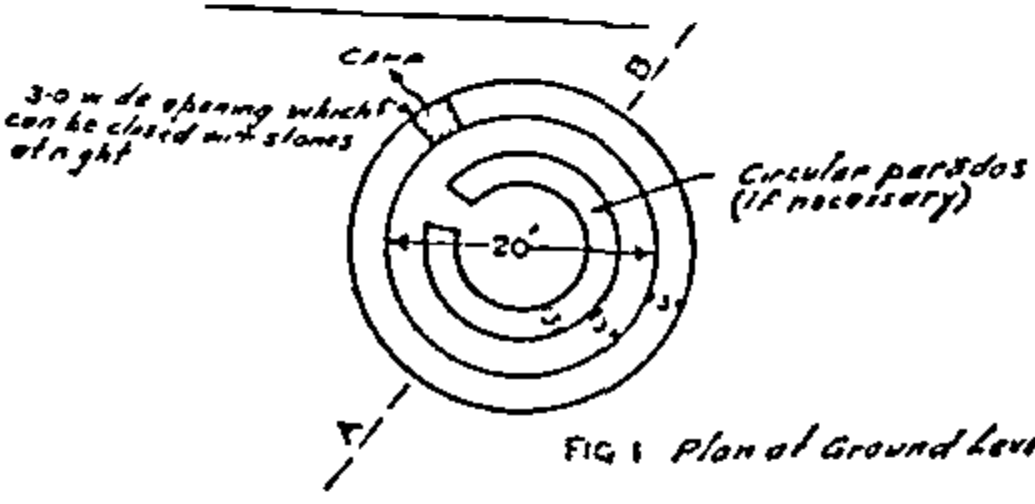


FIG 1 Plan at Ground Level.

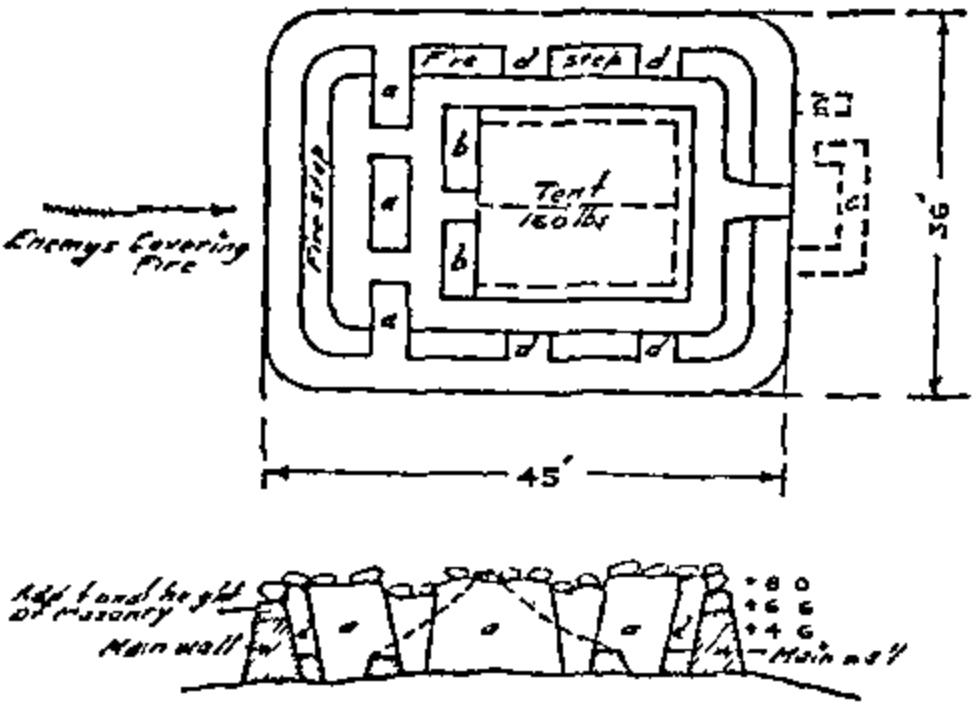
FIG 2 SECTION ON A B

PLATE XV.

SAMPLES OF SANGARS

Permanent Sangar for picket of 24 riflemen.

FIG. 1 PLAN



aa = parados
bb = traverse (not shown in Section to avoid confusion)
cc = cover to entrance
dd = traverses.

Permanent piquet sangars have to be large enough to take a 160 lb tent, and to allow a communication at least 3 ft broad between the tent and the inside of the parapet [illegible]

this amount

If the stone is within 50 yards of the sangar six carriers will probably be sufficient to provide stone for each pair of builders

(ii) In addition to the building carrying stonegetting and wiring parties the following must be arranged for —

(a) Digging foundations for walls levelling the ground inside the sangar and filling sandbags for the top of the walls
(b) Carrying up the piquet stores *e g* ammunition water rations tent etc
(c) Clearing jungle round the piquet, if necessary
(d) Making a path for pack mules up to the sangar, if necessary.

25. OBSTACLES AND IMPROVISED ROADS AND TRACKS.

[illegible]

[illegible] —They should not be so [illegible] as [illegible] attacking troops [illegible] with prearranged [illegible]

essential — [illegible] the [illegible]

6 *Wire*—The plain wire securing a coil of barbed wire must be cut, and a piece of sandbag or white cloth tied to the end of the coil in order that there shall be no difficulty in finding it at night any tin on the wooden drums must be broken off to prevent noise

Any temporary lashing that may be required for the transport or carrying of materials should be of twine so that it can be cut easily in the dark

ROAD BLOCKS

7 (i) *General*—Blocks must be covered by the fire of the defenders. Suspicious marks which suggest the existence of mines are useful.

(ii) *Siting*—
(a) must be at a point over which the attackers must pass
(b) must be in a defile so that the A F V cannot easily circumvent it

8 *Construction*—i *Carts*—Farm carts filled with stone or other heavy material form good road blocks Unloaded carts can be swept aside by armoured cars

ii *Trees*—Big trees felled across a road form a good obstacle

To fell a tree in a required direction cut into it as far as the centre on the [illegible]

IMPROVISED ROADS AND TRACKS

10 These are of three kinds—for men pack animals and transport

All tracks must be reconnoitred pegged out roughly levelled, drained and clearly marked by posts or notice boards

Batteries and conspicuous points which draw fire should be avoided

Dimensions of tracks are given below

Detail	Ruling Gradient	Maximum Gradient	Minimum radius of curve	Width.
Tracks for Pack mules	1 in 8	1 in 6	6	8
Tracks for Camels	1 in 13	1 in 8	10	10
Tracks for animal Transport carts and occasional M T	1 in 16	1 in 10	35	18

The widths given above are a minimum for two-way traffic

11 *Tracks for Men*—i *General*—When making tracks, the following points should be borne in mind —

(a) Each track should be 3 ft wide to enable men to move along it rapidly on a dark night
(b) A one way track should be first completed as soon as possible a duplicate track should be made to give an Up and Down route
(c) Lateral communication between tracks should be provided especially in heavily shelled areas

(d) Trench boards are the most suitable form of track and should be laid on transoms bedded in the ground

11. *In sandy country* —A quickly made and efficient track can be made by spreading out rolls of wire netting (½ in or 1 in mesh) on the ground and pegging it down firmly on both sides

12 *Tracks for pack animals* —The route which involves the least earthwork should be chosen

(i) The track should be 4 to 5 ft wide for single traffic and 8 to 10 ft. for double If less than 4 ft the mules will slip off
(ii) Surface drainage must be provided by means of a ditch on each side of the track
(iii) "Up" and "Down" single tracks are better than one two-way traffic track
(iv) For crossing boggy patches of ground, fascines, brushwood hurdles or a corduroy of logs are useful

13 *Tracks for transport vehicles* —For continuous two way M T convoys the tractor should have a minimum width of 24 feet A layer of shingle should be laid on the surface the width of this surfacing should not be less than 20 feet.

Emergency road repairs

14 *Ruts and shell holes* —The hole should be cut out square If the foundation [illegible]

26. CONCEALMENT.

1 *Enemy observation* —Concealment must always be directed against two dangers —

(i) *Air observation* —Visual and Photographic
(ii) *Ground observation*

2 *Methods* —The chief ways of obtaining concealment are —

I *Screening* —Site works so as to make use of natural features, such as folds of the ground hedges trees and woods

A screen need not be solid to be effective provided it has a background [illegible]

i. *Spoil hea*
ii Develo
able

5 *Tone*—Objects in photographs appear black or white or various tones of grey The smooth surfaces of various colours appear as follows —

[illegible] the object must be the same as that of the background as it

8 *Concealment from ground observation* i *Screening*—Make use of existing features such as hedges banks crops woods buildings or rising ground Claims of concealment must be balanced with the necessity for adequate fields of fire

ii *Background*—Avoid skylines
iii *Freshly dug earth* Very conspicuous
iv Propose sites for work should be observed from the enemy s point of view before commencement of work and this should be continued during its execution when possible

9 *Point regarding concealment of various works*—i *Machine-gun emplacements*—

(a) A site should be chosen which does not require a parapet raised above ground level In these cases the earth dug out of the emplacement should be removed to some distance or concealed under trees or bushes

ii. *Observation posts* —Indications are given by the tracks made by linesmen patrolling the telephone line and by an approach trench cutting through the crest to give safe access or to take away the spoil

iii. *Obstacles* —They should be made in irregular lines Wire on broken ground does not show up Make use of existing hedges or ditches A wide belt of thin wire is less conspicuous than a narrow belt of thick wire

Freeting parties must use existing tracks where possible

iv *Trenches* —These cannot be concealed from the air except in thick trees The top of the parapet should be as irregular as possible Slopes of earth on the parapet should be gentle to avoid shadows Background must always be provided to prevent the heads of the defenders showing up against the sky

v *Loopholes* —The sides and mouths of loopholes often throw very black shadows Loopholes should not point straight towards the enemy's position, but should be set obliquely in the parapet The flanks of forward traverses are good positions

The shadow cast by the mouth of a loophole can be broken up by covering it with a network of twigs or wire netting etc

No light must be allowed to show through loopholes
The outline of the parapet must not be broken by headcover over loopholes

27. BRIDGES AND BRIDGING EXPEDIENTS

1 Reconnaissance (*see* Eng Tr Section 61)

(i) Tactical points —

(a) Relative command of each bank
(b) Position for artillery support
(c) Position for covering fire for m g and rifle [illegible] infantry,

[illegible] view

[illegible] across

(ii) Technical points —

(a) Nature and width of gap
(b) Depth, width and current of river
(c) Nature and slope of banks and bottom
(d) Any existing crossings and their description
(e) Approaches
(f) Subsidiary channels
(g) Rise and fall of tide floods
(h) Local materials—boats etc
(i) Positions for unloading and stacking stores—traffic circuits

2 Bridging expedients—

i In shallow water carts or wagons may be used to form the substructure of a bridge

ii Small gaps may be filled up with bundles of brushwood, channels being left for the passage of the water

iii Barrels make buoyant floating piers for bridges or rafts, but are heavy to launch

iv Inflated skins petrol cans and drums or earthenware pots (enc in a wooden framework) may be made of waterproof mate

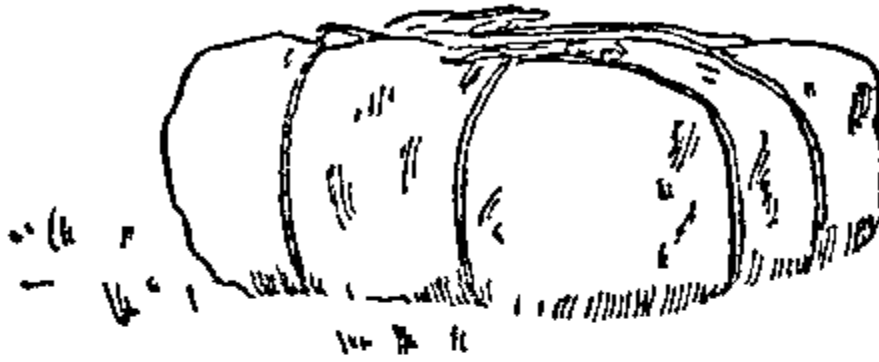
v Rafts or piers for bridges may be made of waterproof mate such as tarpaulins ground, sheets, stuffed with hay, straw, heather ferns (*see* Plate XVII)

PLATE XVI

BRIDGING EXPEDIENTS

Tarpaulin 18x15 stuffed with straw &c

FIG. 1



Raft of four tarpaulins as Fig 1

FIG 2

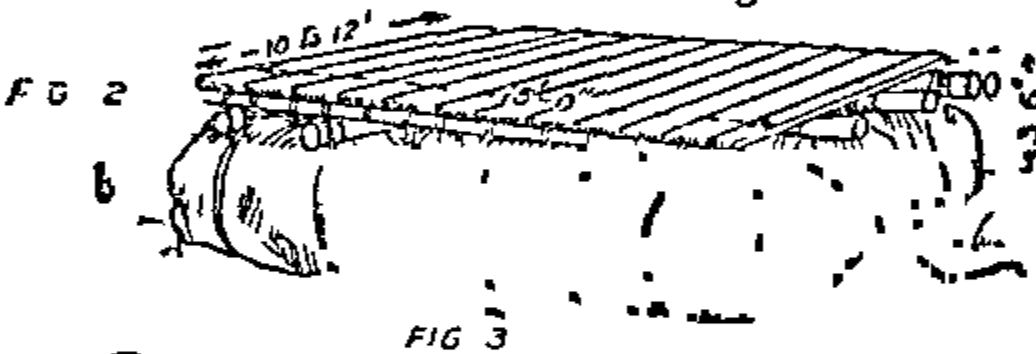
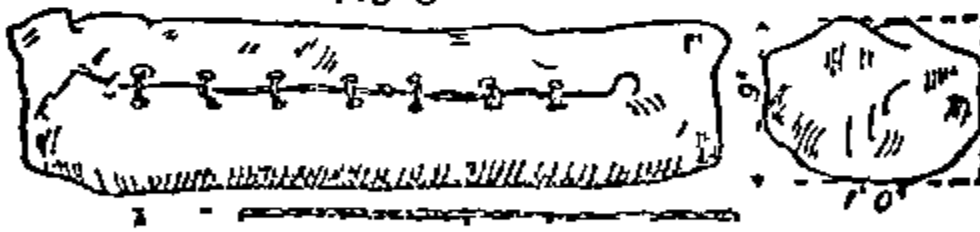


FIG 3



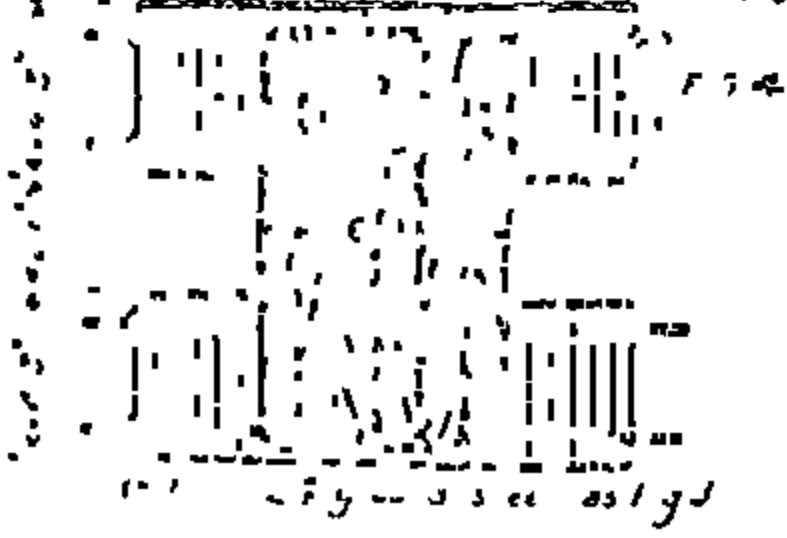
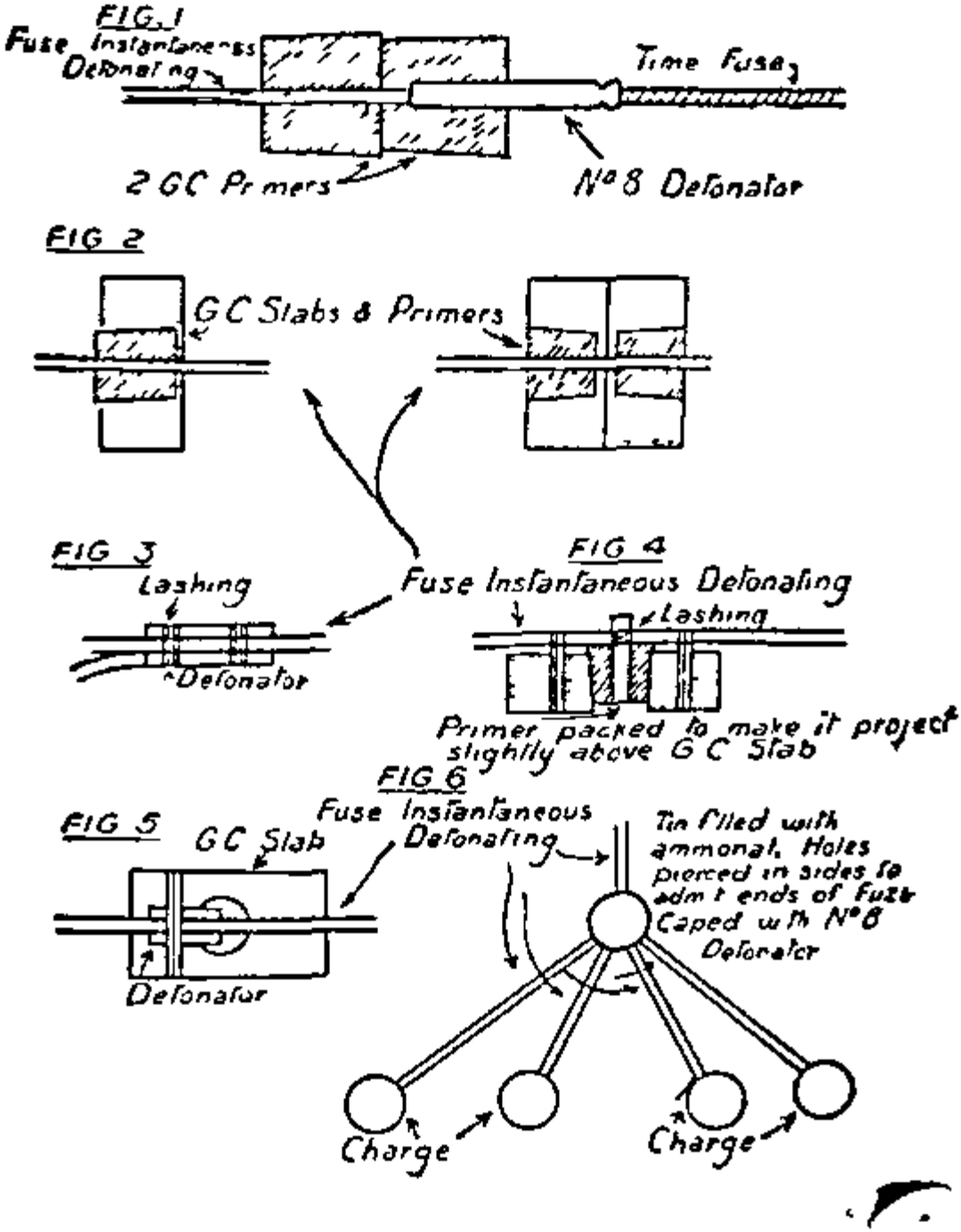


PLATE XVII.

DEMOLITIONS—USE OF FUZE, INSTANTANEOUS DETONATING.



5 The buoyancy of closed vessels can be determined with sufficient accuracy by the following methods —

i When the contents are known—multiply the contents, in gallons, by 9 to give the safe buoyancy in pounds

ii When the contents are not known—measure the capacity in cubic feet and multiply by 54 to give safe buoyancy in pounds

28. DEMOLITIONS.

1 *Wet gun cotton* is issued in tin cases containing 4 1 lb slabs, each 6 inches by 3 inches by 1½ inches

Primers weighing 1 oz are issued in boxes of 6 tin tubes each containing 10 primers

[illegible]

ont dynamite is a dangerous operation and should be left to experts; dynamite is also dangerous after exposure to damp

4 *Detonators* —No 8 service detonator is used with safety fuze

No 13 electric detonator is similar to the No 8 but provided with wires for electric ignition

[illegible]

5 *Fuze* —i *Safety fuze* coloured black, and made to fit the No 8 detonator It will burn underwater and burns at the rate of about 2 feet a minute Packed in boxes containing 8 fathoms

ii *Fuze, instantaneous detonating,* consists of a lead tube filled with high explosive

[illegible]

6 *Method of connecting up charges* —The charge must be in close contact with the object to be demolished and each slab must be in contact with

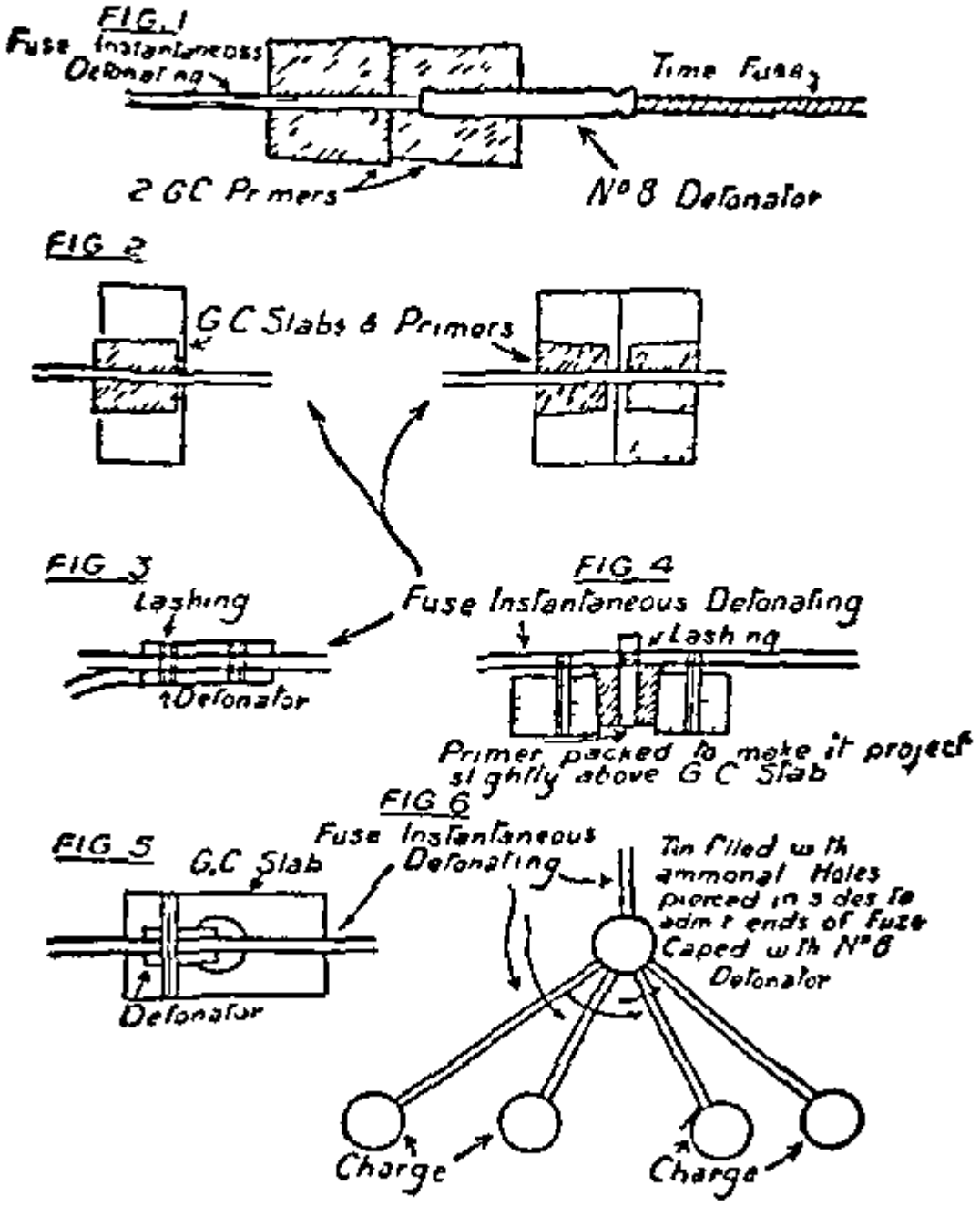
[illegible]

or masonry of the arch

8 For more complicated demolitions the following formula should be used

PLATE XVII.

DEMOLITIONS—USE OF FUZE, INSTANTANEOUS DETONATING



Summary of Formulæ

In the following formulæ, unless otherwise noted in the remarks column —

B = Width of object attacked, *i.e.*, length of charge, in feet
b = " " " " in inches
T = Thickness of object attacked, in feet.
t = " " " " in inches
c = Circumference of object attacked in inches
d = Diameter of object attacked in inches
D = " crater in feet
L = Line of least resistance in feet

(i) Cutting Charges.

Explosive used *gun-cotton* or explosives of equivalent shattering power, *e.g.*, dynamite No 1 or geligniite

Charges untamped

Object attacked.	Charge in lb.	Remarks
Iron or steel rounds	$\frac{3}{4} d^3$ or $\frac{C^3}{16}$	A slab of gun-cotton will cut an unsupported bar of 1½ inch diameter or cable of 4 inch circumference
Iron or steel rectangles	$\frac{1}{2} bt^2$	A slab of gun cotton will cut a steel plate 1 inch thick
Masonry walls	$\frac{1}{2} BT^2$	The length of breach B must not be less than the height of wall 2 slabs of gun-cotton per foot run are sufficient for walls 2 feet thick.
Masonry piers	$\frac{3}{4} BT^2$	
Masonry arch rings	$\frac{3}{4} BT^2$	
Reinforced concrete, thin slabs	$20 BT^2$	For other forms, bare the reinforcement and cut bars separately
Timber hardwoods —		
Rectangular Section	$3 BT^2$	Where D is diameter in feet.
Circular Section	$3 D^3$	For soft woods these charges may be halved

(ii) Mined Charges

Explosive used. *ammonal* If gun cotton or dynamite are used a 25 per cent. to 30 per cent air space must be given in the chamber.

Charges tamped

Object attacked.	Charge in lb	Remarks.
Mined charges in—		
Rock and masonry	$\frac{D^3}{50}$ or $\frac{L^3}{6}$	
Medium and soft soils .	$\frac{D^3}{100}$ or $\frac{L^3}{12}$	
ade ground . . .	$\frac{D^3}{200}$ or $\frac{L^3}{24}$	

(iii) BOREHOLE CHARGES.

Explosive used: *dynamite or blasting gelatine*

Charges tamped

Object attacked.	Charge in ozs	*Remarks*
Masonry	$L^2 \times$	L measured to centre of charge, which must not occupy more than ⅓rd of borehole, or be within 8 inches of surface
Timber	$6 D^2$	D diameter (or side) of baulk in feet

The following approximate weights of dynamite or similar explosive can be loaded into one foot run of borehole of the diameters shown —

Diameter of hole in inches	1	1¼	2	2½	3	3½
Weight in lb per foot run	¼	1¼	2¼	3½	5	7

(iv) CONCUSSION CHARGES

Explosive used *gun cotton dynamite blasting gelatine or ammonal.* Charges must be doubled if pertures are not blocked

Object attacked	*Charge in lb*	Remarks
Masonry buildings, etc	$K \frac{AT^2}{10}$	A is the area of internal floor space in sq feet T is the thickness of walls in feet. Values of K are as follows — Mud walls inferior— 1; Masonry 1; Good masonry 2; Reinforced concrete 4 to 10

(v) MISCELLANEOUS DEMOLITIONS

Object attached	Remarks
Guns, modern long range	Use charge of d^2 slabs in breach or half that at muzzle where d is bore of gun in inches. Older pieces charges may be *reduced*
Howitzers	Half the charge for a gun. *N B* —In both the above, when time is available for careful preparation 8 oz. of dynamite or 1 lb of ammonal may be used instead of one slab of gun-cotton
Stockades	Earth and timber 4 lb per foot run. Steel rails, 7 lbs per foot run.
Water tanks	Submerged charge of 1 slab per 100 cubic feet *of capacity*
High explosive shell	One slab will detonate a shell detonated in a pile will rest.

rifle bullets through boiler (fairly easily patched or smash cylinders, all right

29 WEIGHTS AND 'MAN LOADS' OF COMMON FIELD WORKS STORES

NOTE —The loads given in this Table are based upon moderate conditions of ground and weather and *on a man load of* 30 lbs Under good conditions of ground and for short distances these loads can be increased to 35 lbs Men accustomed to carrying loads can exceed this

The loads for pack mules camels A T carts etc can be calculated by remembering that this form of transport can carry the following loads under moderate conditions —

Pack mules	160 lbs
Camels	4 to 6 mds
A T Carts	8 mds (10 miles under good conditions)
M T	According to their rated capacity

Pack mules can carry long pickets with difficulty They cannot carry corrugated iron sheets and similar loads

Item no	Article	Measurements weights etc	Man load
1	Sand bags	Issued in Bales of 200 weighing 96 lbs	50 to 75 sand bags
2	Barbed wire	No 12½ gauge Drums of 130 yds weighing 32 lbs	1 drum
3		No 14 gauge Drums of 176 yds weighing 32 lbs	1
4	Pickets screw long	5 ft 7 inches long Weight of 1 picket 6 lbs	4 pickets
5	short	2 ft 1½ inches long 2½ lbs	12
6	angle iron long	6 ft long Weight of 1 picket 14 lbs	2
7	short	2 ft long 4½ lbs	8
8	wooden long	5 ft long and 3½ inches to 4 inches in diameter Weight of 1 picket about 9 lbs	4
9	short	2½ ft long and 2½ inches to 3 inches in diameter Weight of 1 picket about 3 lbs	8
10	Barbed wire concertinas	Weight of 1 concertina about 30 lbs	1 concertina
11	French wire concertina	19½ lbs	2
12	Staples for French wire	Issued in boxes of 300, weighing 160 lbs	60 staples
13	Plain wire 14 gauge (100 lbs per mile)	Issued in bundles of about 1 000 yds weighing 56 lbs	500 yards
	Wire netting	Issued in rolls 3 ft wide and 50 yds long weighing 80 lbs	20

Item No	Article	Measurements weights etc	Man load
15	Expended metal (XPM) sheets	Sheets 6 ft 6 inches long and 3 ft wide weighing 8½ lbs Issued in bundles of 20 sheets	3 sheets
16	Brushwood hurdles hurdles	Weight of 1 hurdle, 36 lbs	1 hurdle
17	Corrugated iron sheets (6)	6 ft long and 3 ft high Weight about 56 lbs	½
18	(7)	6 ft. long and 2 ft 2 inches wide Weight of 1 sheet 16 lbs	2 sheets
19	(8)	7 ft long and 2 ft 2 inches wide Weight of 1 sheet, 18½ lbs.	1½
0	"	9 ft long and 2 ft 2 inches wide Weight of 1 sheet 28 lbs	1
		(NOTE —Corrugated iron sheets are also of different thicknesses They should therefore be weighed before deciding on the load)	
21	A frames	Weight of 1 frame 30 lbs	1 frame
22	Trench boards	6 ft long Weight of 1 board 35 lbs	1 trench board
23	Timbers, 4" × 9" × 3	Weight of 1 ft run 2½ lbs	
24		9 lbs	
25	Planking	1 inch 1½ inches or 2 inches thick the weight of 1 ft run depends on the breadth	
26	Round timber	9 ft long and 6 inches diameter Weight 90 lbs	
27		9 Weight 180 lbs	
		(NOTE —The weights given above for wood are for soft woods like deodar and chir For heavy wood like sal or teak, multiply these weights by ⅔)	
28	Steel beams of I section	9 ft long 5 inches high and 3 inches broad Weight of 1 beam 100 lbs	
29	Sand	1 cubic ft weighs 120 lbs	½ sand bag
30	Earth	1 " 80 lbs	
31	Water or oil	1 gallon weighs 10 lbs	1 tin containing 4 gallons
32	Nails —		
	1" long	800 nails = 1 lb	
	2" "	122 " = 1 lb	

	3	5* = 1 lb	
	4*	30 = 1 lb	
	5	20 = 1 lb	
	6	14 = 1 lb	
33	Sl ovels G S., small	Weight of 1 sl ovel = 3½ lbs	8 sl ovels
34	" R E., large	1 " = 5 lbs	6
35	Pi ks	1 pi k = 8 lbs	4 pi ks
36	Crowbars 5 6 long	1 crowbar = 31 lbs	1 rowbar
37	Axes fe ng	1 axe = 4½ lbs	
38	l and	1 = 2½ lbs	
39	B lhooks	1 b l ook = 2½ lbs	
40	Saws crosscut	1 saw = 6½ lbs	
41	fold ng	1 = 1½ lbs	
42	l and	1 = 1½ lbs	
43	Hammers sm a l	1 ha mmer = 1 lb	
44	s edge	1 = 14 lbs	2 sledge hammers
45	Mauls	1 maul = 14 lbs	2 mauls
46	Tapes tracing	In 50 yds bund es	12 bundles

NOTE —Wi enever p ss b e ma loads s o ld be tied p in bund es conven ent for carrying, befo e th e carrying parties ake them over

CHAPTER VII.

ACCOMMODATION.

(*See* F.S.R., Vol. I.)

30. GENERAL RULES.

3 The following rules will be observed in distributing troops :—

1 Personnel for store depots and workshops should be accommodated

iv If—

4 Areas for accommodation will be delimited and allotted to formations by the General Staff branch The allotment of accommodation within these limits will then be the duty of Q (L.G.) branch

5 Areas in rear of the zone of active operations selected for the accommodation of troops must be so arranged that, so far as tactical requirements allow,

To face page 122

S.

		Flag (by day)	Lamp (by night)
1	ance be n on		
2			
3			
4			
5			
6			
7			
8	Br t sh / Native		

CHAPTER VII.

ACCOMMODATION.

(*See* F.S.R., Vol. I.)

30. GENERAL RULES.

2. If an engagement is anticipated, the larger units should be distributed in the order from front to rear in which they will come into action, provided that when liable to attack, cavalry and other mounted troops are in the least exposed position. Artillery, tanks, armoured cars and ancillary units should be covered by other arms.

3. The following rules will be observed in distributing troops:—

(1) Personnel for store depots and workshops should be accommodated

4. Areas for accommodation will be delimited and allotted to formations by the General Staff branch. The allotment of accommodation within these limits will then be the duty of Q.M.G.'s branch.

5. Areas in rear of the zone of active operations selected for the accommodation of troops must be so arranged that, so far as tactical requirements allow,

[illegible]

31 BILLETS

[illegible]

2 In allotting areas units should be kept together under their own commanders as far as possible To make full use of stabling it may be necessary to mix the arms

[illegible]

5 *The following points should be observed in addition to those given in* Sec 30, 4 —

i Head quarter offices should be selected with due regard to signal communications and be easily found Within danger areas cross-roads should be avoided In areas occupied successively by different formations the same buildings should be occupied as headquarter offices

ii Mounted men must be near their horses guns and wagons, and staff

iii [illegible]

iv [illegible]

General Rules on Billets

7 From the moment the advanced troops enter a village or farm, precautions must be taken to prevent the inhabitants conveying information the enemy The local telephone system or any wireless installations be controlled search made for pigeon lofts and all confined pigeon located

[illegible] *offers in the* [illegible] *and of the* [illegible] stables at [illegible]

10 If necessary, the inhabitants should be disarmed and forbidden to leave [illegible] to see that [illegible] troops

All houses where *liquor is* obtainable must be placed under *control*

12 In every house occupied by the troops at least one man must be detailed to guard the arms Arms are not to be piled or left outside

13 As a precaution against fire and against air observation, and also to prevent signalling to the enemy by means of lights directions should be issued controlling the use of fires and lights by the troops and inhabitants It may sometimes be necessary to establish special fire piquets

[illegible]

i Billets with full subsistence
ii Billets with partial subsistence
iii Billets without subsistence

[illegible]

17 The defensive arrangements will include distinctive alarm signals for —

i Gas attack
ii Attack by air
iii Artillery bombardment
iv Attack by other means from the ground

32. CAMPS AND BIVOUACS.

1. Bivouacs admit of concentration and readiness but are trying to the health of men and horses in cold or wet weather and should be resorted to [illegible] in cases of tactical necessity

used

3 The site should be dry and on grass if possible Avoid steep slopes Large woods with undergrowth low meadows the bottoms of narrow valleys and newly turned soil are apt to be unhealthy Ravines and watercourses

6 Each commander must be informed of any localities or depots outside his own area on which he may draw for water fuel forage etc , also which roads he may use and any special defensive sanitary or other measures he is to take

7 If grazing is necessary, arrangements must be made for the allotment and protection of grazing areas The position to which dead animals are to be taken and method of disposal must be settled The general position of latrines and kitchens in each area must be fixed

8 Special care is necessary to prevent troops from the various areas crossing one another in proceeding to ground which they may have to occupy in case of attack.

10 When British and Indian troops camp together avoid putting slaughter places near Hindu troops The slaughter places should be screened from view British troops must not be allowed near Indian cooking places or watering places, nor must they touch the cooking utensils of Indian troops

11 A light should never be left burning in an unoccupied tent and candles

TRENCH SHELTERS AND DUGOUTS

12 Trench shelters and dugouts are used in protracted defence and their construction is described in the Manual of Field Works (All Arms) Prolonged occupation of dugouts is trying to the health and detrimental to discipline and morale

In the forward area dugouts and bomb-proof shelters will be required,

17 Sites for cooking places latrines and incinerators are marked the following points being attended to —

[illegible]

GENERAL

18 (i) All followers must wear identity badges

(ii) No other natives of the country should be allowed inside the perimeter

(iii) If a bazar for the sale of local produce is established it must be outside the perimeter and covered at close range by a strong guard

(iv) All followers must know their Alarm Posts and will assist in building cover for them

(v) Police will be detailed to control followers in case of alarm

CAMP SPACES

19 The following table shows the approximate area required for certain units etc in a temporary perimeter camp The figures should only be taken as a guide They include Unit transport only as Attached transport normally rejoins its parent unit

Unit	Area in square yards
Headquarters Cavalry Brigade	1 600 (40 × 40)
Infantry	1 800 (30 × 60)
Cavalry—	
British Cavalry Regiment	4 000 (200 × 120)
Squadron	6 500 (130 × 50)
Indian Cavalry Regiment	[illegible] 000 ([illegible] × 110)
Squadron	6 000 (120 × 50)
Artillery—	
R H A Battery	9 000 (100 × 90)
Field Battery R A	5 250 (05 × 50)
Light Battery R A	8 000 (100 × 80)
Indian Mountain Battery (3 7 How)	7 500 (100 × 75)
(2 75 gun)	7 000 (100 × 70)
Indian Mountain Bde Amn Coln	3 500 (70 × 50)
Engineers—	
Field Troop S & M	5 000 (100 × 50)
Field Company S & M.	3 000 (60 × 50)
Infantry—	
British Infantry Battalion	9 450 (13[illegible] × [illegible]0)
Indian Infantry Battalion	8 [illegible]0 (110 × 75)
Miscellaneous—	
Indian Mountain Portable Signal Section	750 ([illegible]5 × 30)
Cavalry Brigade Signal Troop	4 500 (100 × 45)
Infantry Brigade Signal Section	1 600 (40 × 40)
Armoured Car Coy 1 Tanks	4 3 6 (66 × 66)
Cavalry Field Ambulance	1 500 (50 × 30)
Field Ambulance	3 000 (50 × 60)
Mobile Veterinary Section	600 (30 × [illegible])
Divisional Troops A T Coy (Mule)	13 000 (100 × 1[illegible]0)
Infantry Brigade A T Coy (Mule)	11 5[illegible]0 (100 × 115)
A T Coy (Camel)	14 500 (100 × 145)

For transport units complete with drivers, tents, saddlery, equipment, etc the following rough rule for calculating the total camp space required for the whole unit is useful:—

Allow for each	horse	13½ sq. yard.
	mule	
	pony	
	bullock	
	Camel	15 sq. yards.
	A. T Cart	10 sq. yards.
	Water Cart	
	L G S. wagon	20 sq yards.
	30 cwt lorry	21 sq. yards.
	3 ton lorry	30 sq yards

STANDING CAMPS AND REST CAMPS

20. When conditions in the air permit, standing camps may be required

When laying out a standing camp, a sketch plan should be prepared and a copy given to the officer responsible for pitching the camp; tents, at the required intervals and distances, should be dressed both from the front and flank; main and cross streets should be maintained for the purposes of communication.

21 A system of surface drainage should be constructed

[illegible]

23 Incinerators for burning dead animals and refuse should be constructed [illegible]

etc

Camping grounds should be definitely allocated for mounted troops, dismounted troops and convoys respectively

25 Cavalry and infantry require an alarm post of 60 yards depth in front of the camp or bivouac in addition to the depth shown below Other arms fall in on the ground where they camp or bivouac

The following distances should be kept clear in front of guns or vehicl

Mehanically drawn guns	13 yards
6-horsed gun or wagon	12 "
4-horsed vehicle	8 "
1 or 2-horsed vehicle	3
M. T lorries	3

All resources available must be made use of to conceal g from aircraft.

PLAN XI

TYPE OF PERIMETER CAMP FOR A MIXED FORCE (LESS LARGE TRANSPORT)

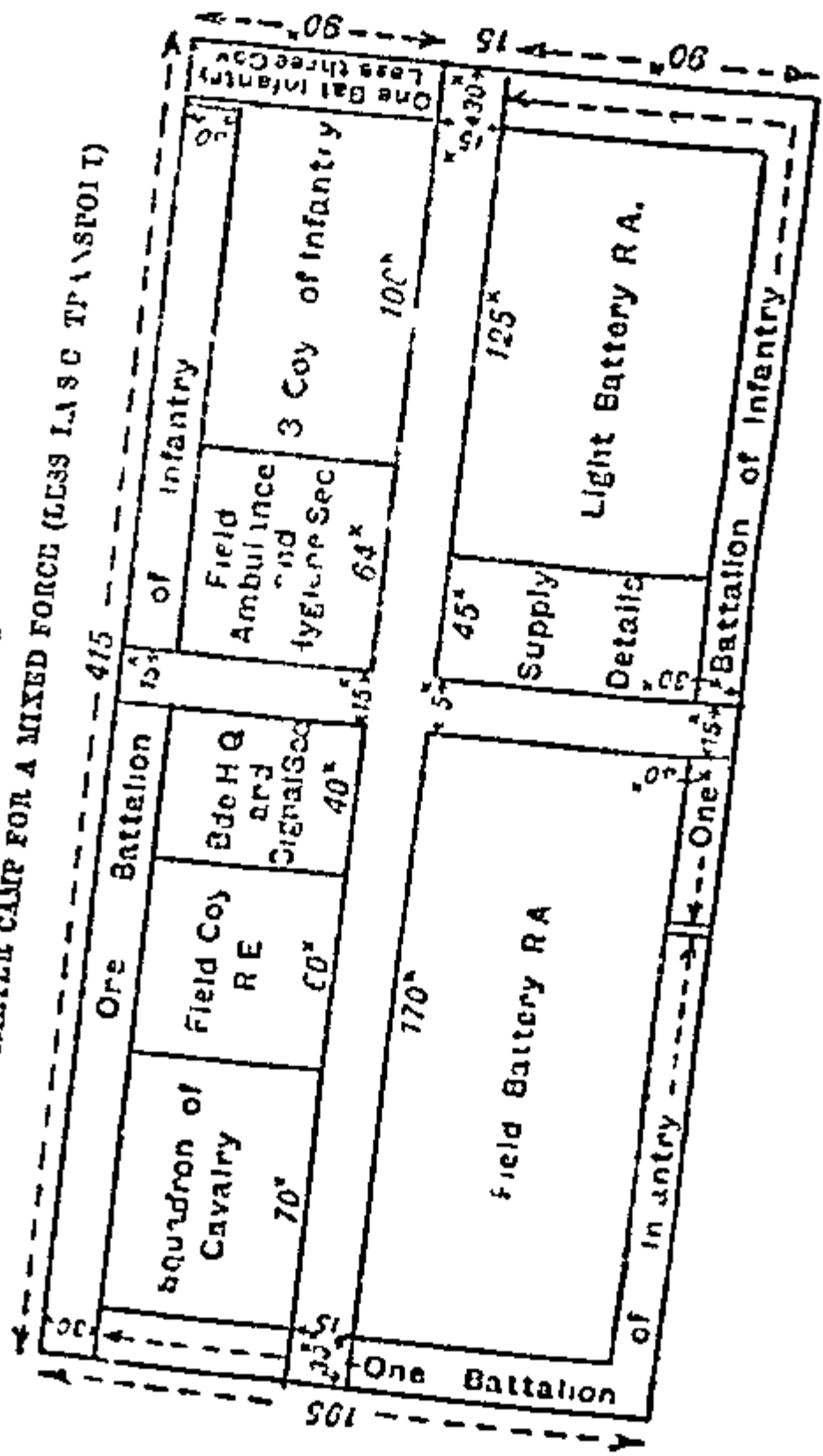
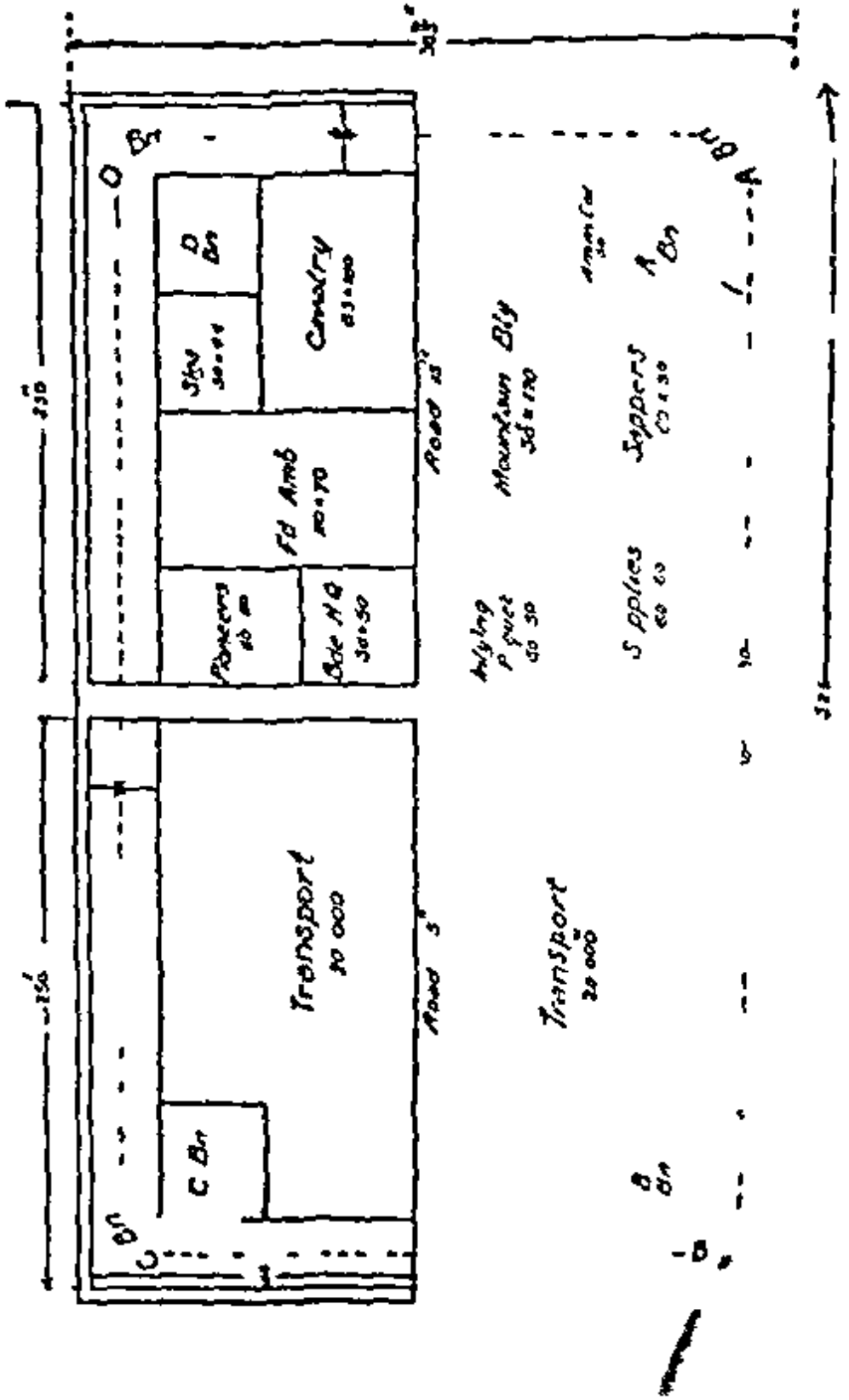


PLATE XXI
RECTANGULAR LAY OUT FOR BIVOUAC OF MIXED IND DIDE



26 The following spaces are required for animals vehicles and tents —

Horse mule pony or bullock	8 × 15
Camel	9 × 15
Elephant	9 × 21
13 pr or 18 pr gun or 4 5" how and limber	7" × 28
Ammunition wagon and limber	7 × 23
Dragons	10 × 18
Medium tanks	11 × 23
Armoured cars	9 × 22
man A F Vs and light artillery tractors	8 × 14
Motor cycle	4 × 9
car	9' × 18
Van or ambulance	9 × 20'
30-cwt lorry	9 × 21
3 ton lorry	11 × 24
Army transport cart	5½ × 14
L G S wagon	6½ × 20½
G S wagon	6½ × 20½
Circular tent single or double	10 radius
Tents Indian pattern privates	40' × 36
staff serjeants	28 × 28
Hospital marquee large	81 × 45
small	45 × 40'
G S tent India (160 lb)	20 × 16
(60)	16 × 10
(40)	10' × 10
(21)	9½ × 7
(officers)	14 × 9
Operating tent	45 × 35
Shelter tent	12' × 7
Store tent	76 × 60

Double the standing space is required for mechanical vehicles to allow room for maintenance and manœuvre

27 With circular tents accommodation is allowed as follows —

Generals colonels and C Os	1 to a tent
Other officers	3
Warrant officers	5
Serjeants	7
Men	15

The accommodation in other tents is as follows —

Tents Indian pattern privates accommodate	16 British
G S tents (160 lb) accommodate	16 British or 20 Indian soldiers
(60)	8 10
(40)	1 warrant officer or N C O
(officers)	2 officers
Shelter tent accommodates	2 men
Tent I P staff serjeants accommodates	2 staff serjeants or 6 privates

DIRECTIONS FOR PITCHING TENTS

28 *Tents circular* *sage* —Mark centre with *peg* Describe a circle with radius of 4 paces on which the pegs will be fixed On this circle drive in the two pegs opposite the door of the tent one pace apart At 3 paces from these pegs on either side of them drive in pegs for guy ropes The other guy rope pegs will be 5 paces from these and 6 paces from each other Put up tent pole to be set and kept perfectly upright Drive in the other pegs which should be one pace apart and in line with the arms of the tent

Door should face point to leeward

7½ paces should be allowed from centre to centre of tents

Cut drains round bottom of tent walls and heap earth inside flap (*See* Plate XXII)

PLATE XXII.
DISPOSAL OF RAINWATER

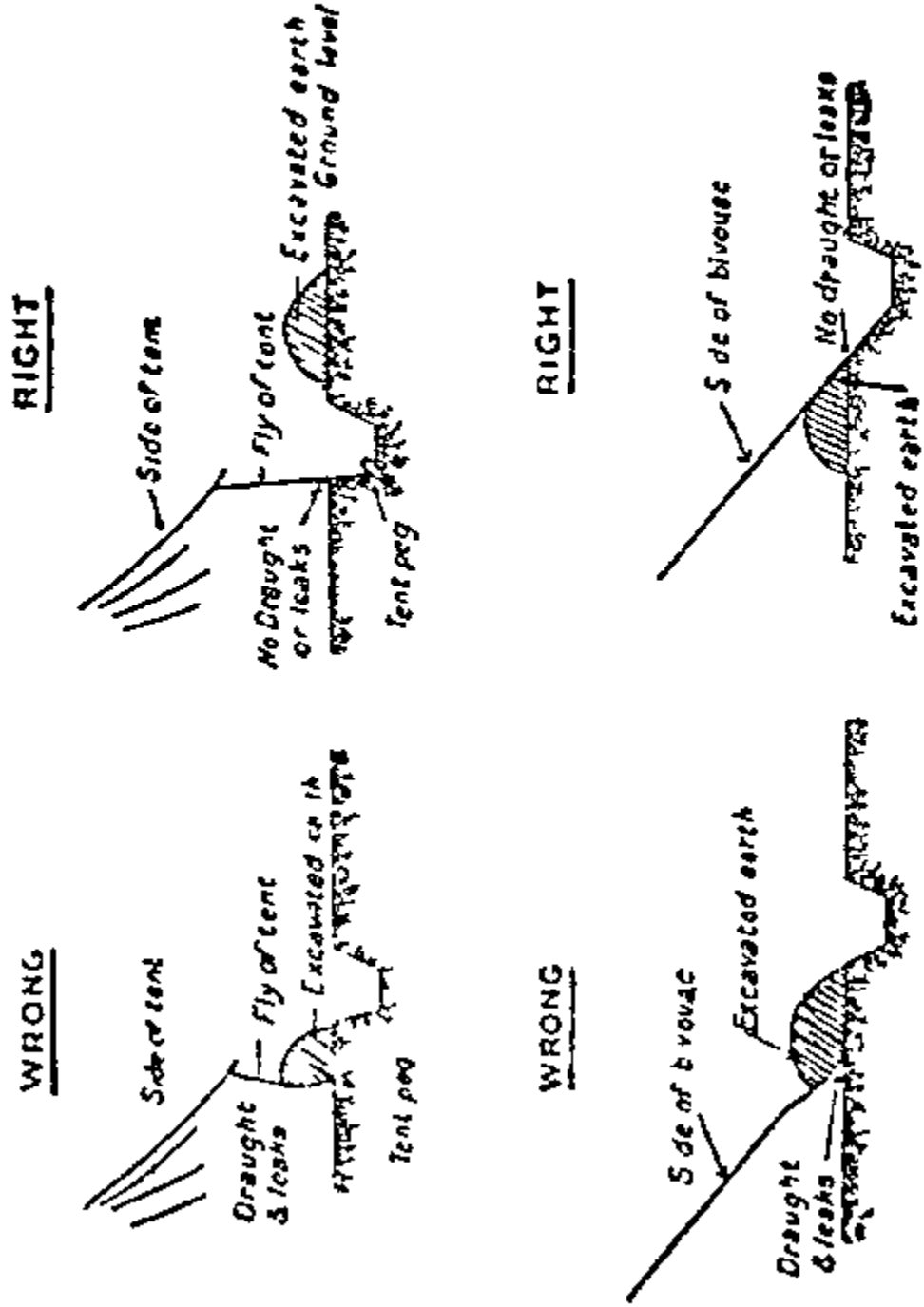


PLATE XXIII

TENT, I.P., ELEVATION—PITCHING PLAN.

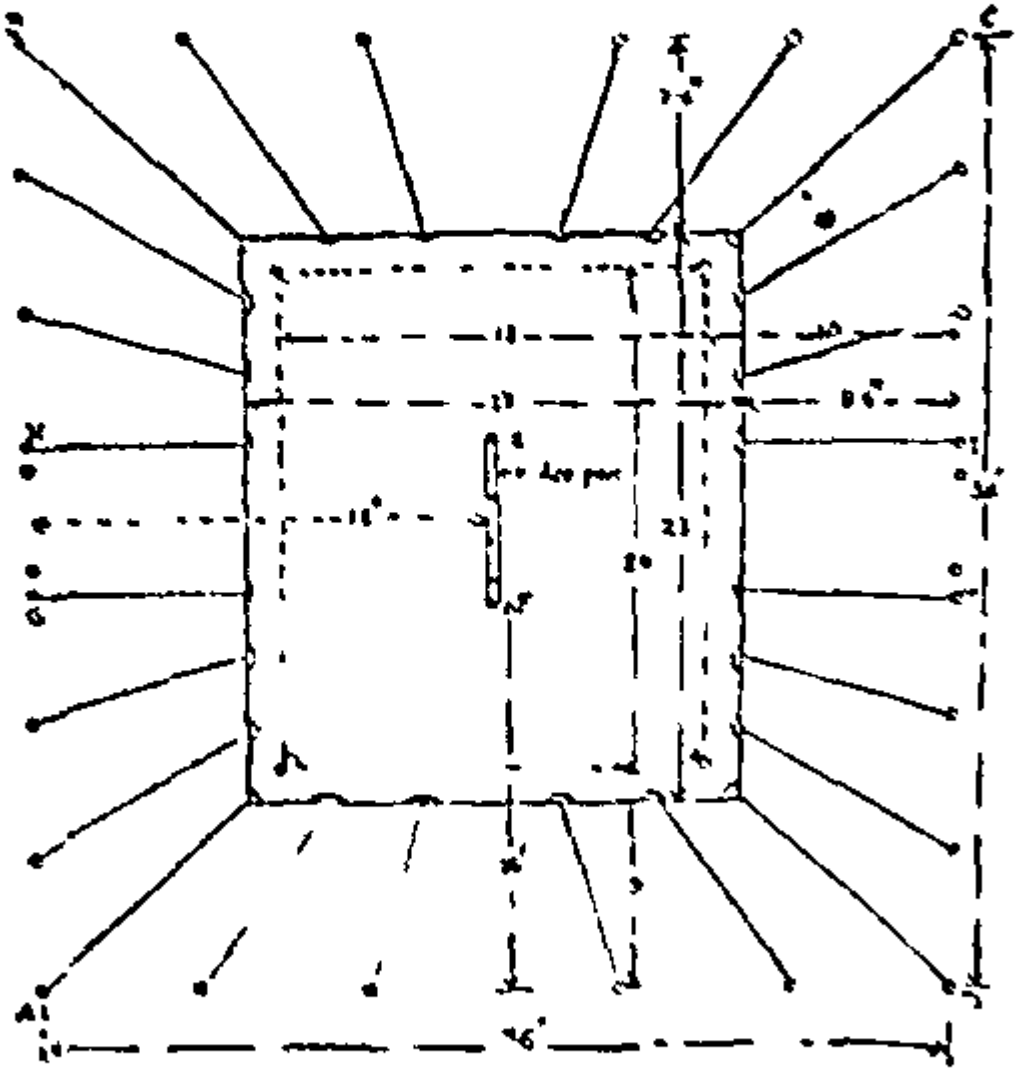
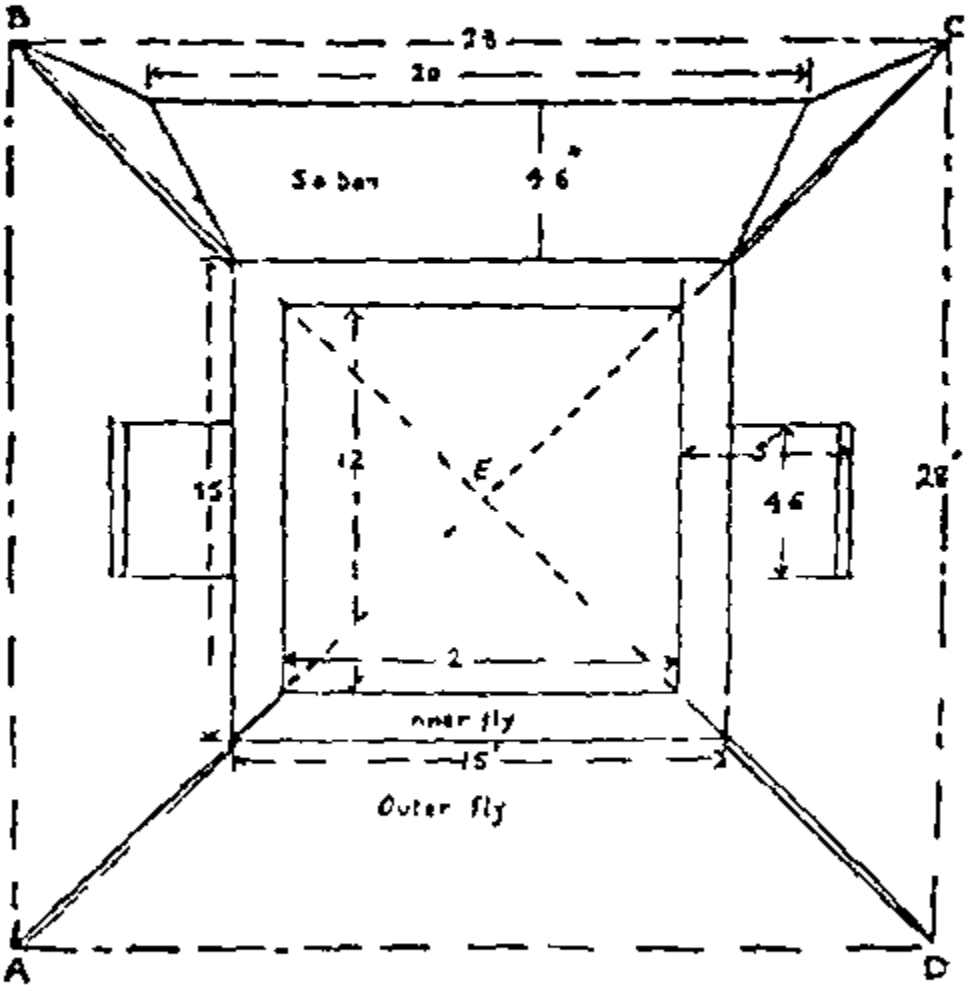


PLATE XXIV

TENT, I.P., STAFF SERJEANTS—PITCHING PLAN



Dig a hole 6 inches deep close to tent pole, then if heavy rain comes on suddenly, the tent pole can be pushed into the hole and much strain is taken off the canvas, ropes and pegs

Allow 1 yard between pegs of adjacent tents
1 " tents of adjacent squadrons
3 yards " " companies
10 " " units

caps are exposed

Make fast the underside corner and side ropes to the pins A, B, G and H, allowing about 13 feet of the rope from the tabs of the corner ropes A and B and about 10 feet from the tabs of the side ropes G and H. These ropes pre-

Stake out the pitching space (A B C D) by means of four corner pins in

Prop up door curtains with poles provided peg down the walls attach sail an to whichever side it is required and fix chicks over the door

Types of Bivouac Shelters

31 *The tent shelter for two men consists of two sheets of dyed khaki duck* 5 feet 3 inches square fitted with buttons button holes, guy and looping lines eyelets, two poles 3 feet long Approximate weight 9½ lb One shelter can be joined on to the next

The following are suggested methods of forming shelters for men —

1 Two forked sticks driven into the ground with a pole resting on them.

Plate XXII shows a method for disposal of rainwater from the roof of a shelter

When no other materials than earth and brushwood are available, a com-

Hutting

A useful type of hut consists of a thatched roof supported by uprights and walls of "Malay Mat" made with brushwood and well plastered with mud

For warm climate a ample space for ventilation should be left at the top of the walls

PLATE XXV

BIVOUACS

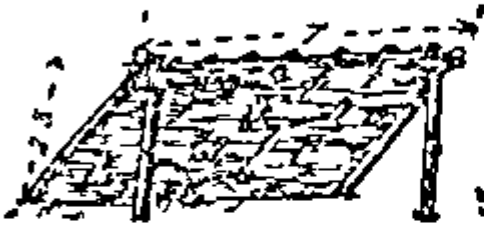


FIG 1

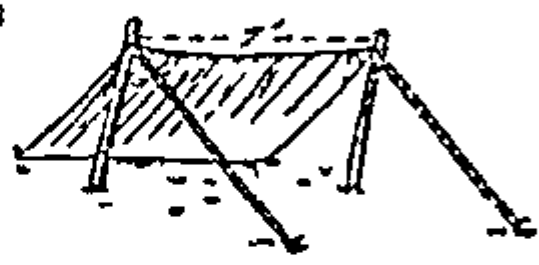


FIG 2

TENT D ABRI

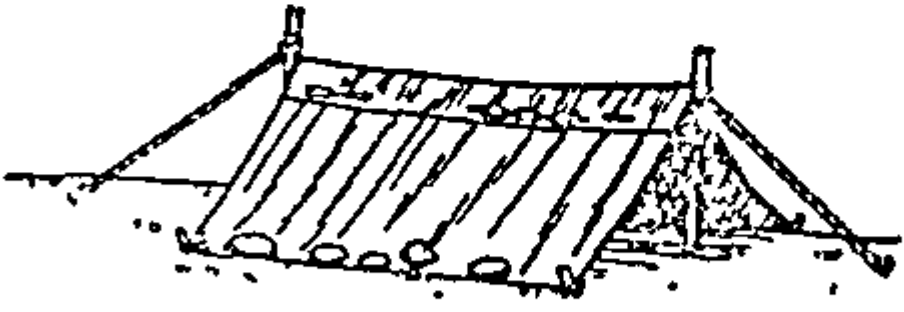


FIG 3

If stoves are provided the floor walls and roofs of huts and billets must be specially protected with sheet iron or tin where the stoves stand or the stove piping passes through

Care of Horses in Camp or Bivouac

[illegible]

wet. [illegible]

33 Measures for the protection of animals from attack by aircraft must be considered beforehand when this form of attack may be expected

Methods of Securing Horses

34 *Tying up a horse*—The following is a useful method for securing a horse to a bush or small tree

Take a suitable branch or bunch of branches place the loop of the reins under and round it then double back the end of the branch breaking it if

Fig 13

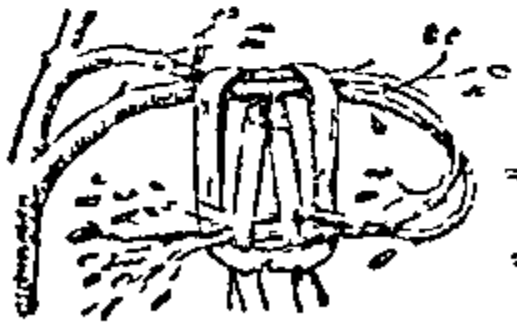
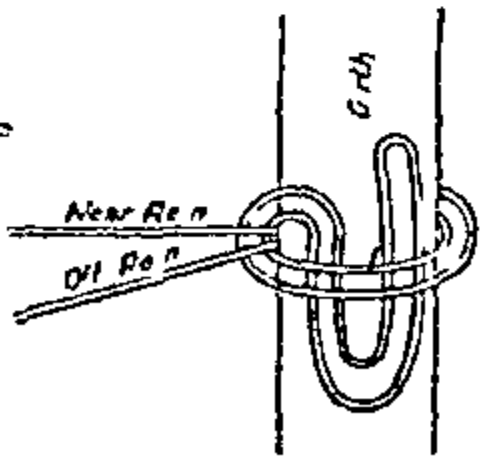


Fig 14



necessary, and pass it through the reins as shown in Fig 13 and tighten up A piece of stick will answer for the same purpose

Horses should not be tied to valuable trees such as those in an orch as damage may be caused thereby

FIG. 15

42 *Linking horses*.—The head ropes are brought over the horses' heads

CARE OF HARNESS AND SADDLERY

(v) Saddlery should if possible always be hung up or raised off the ground.

33. CAMP COOKING.

2 Cooking can also be done in mess tins No trench is necessary The mess tins are arranged in the same way as camp kettles shown on Plate XXVIII Fig 1 with the opening facing the direction of the wind

Boiling, Stewing and Frying

3 To boil a joint of meat place it in boiling water and allow it to bo

Hay Box Cookery.

4 When fuel is scarce the hay box method of cooking will be found mos useful

Recipes

hours

7 *Sea pie*—Ingredients as for Irish stew, with 5 lb of flour and 1½ lb of dripping or suet added for every 20 min Prepare ingredients as in the ... in slices lengthwise and cover with paste, ... ter roll or

PLATE XXVI

COOKER FOR CAMPS AND BILLETS

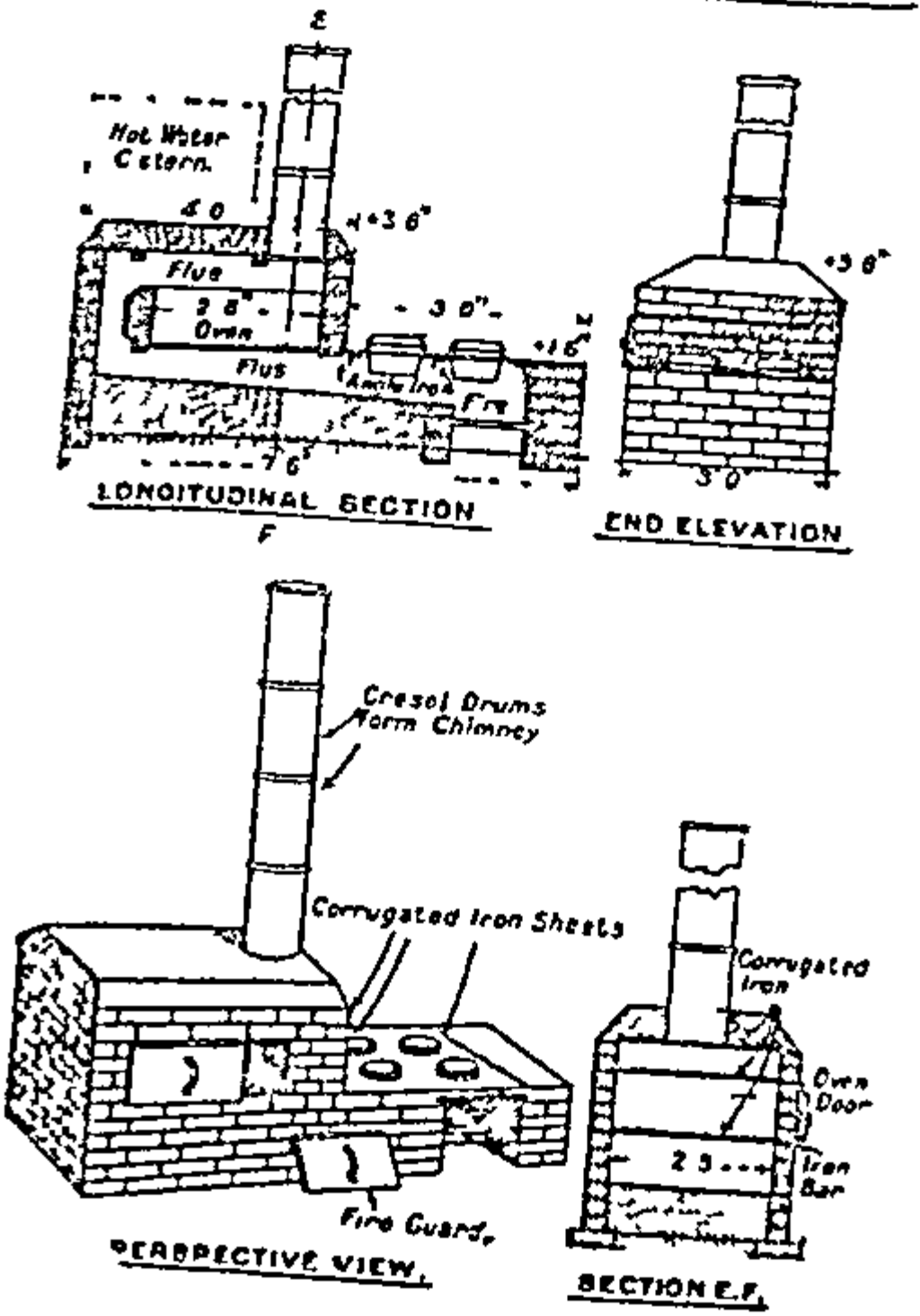
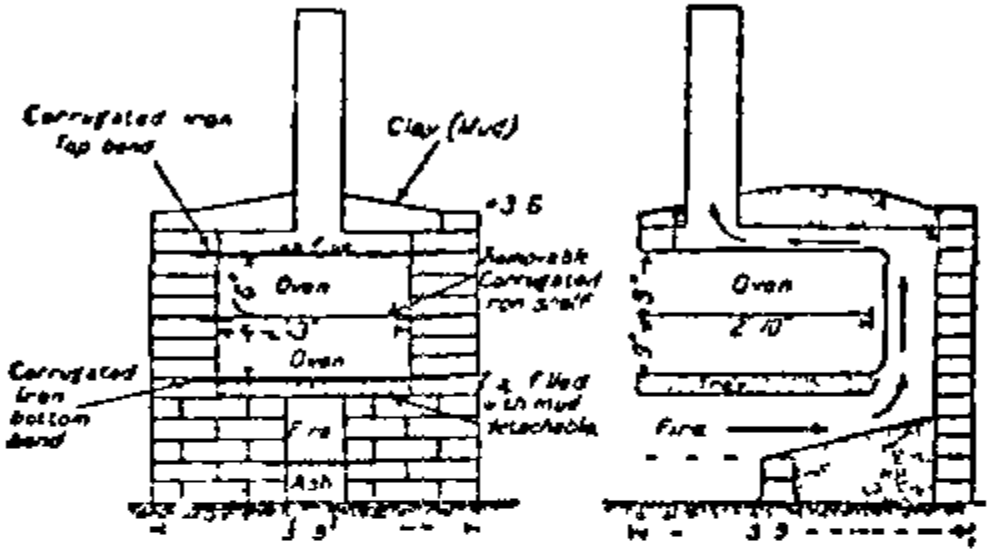


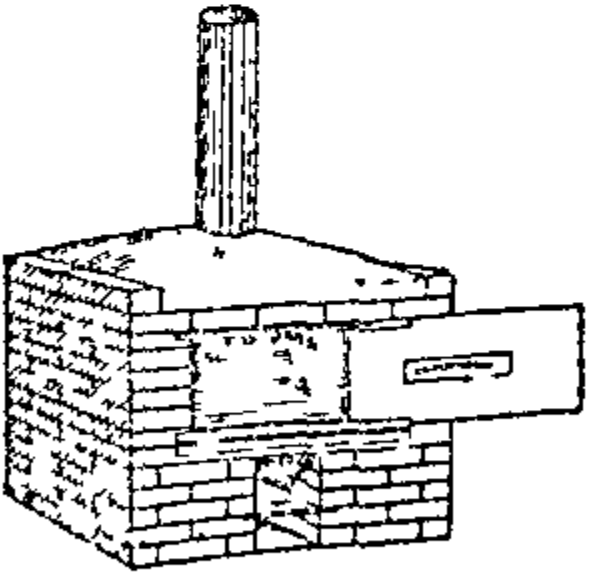
PLATE XXVII

CHAMBER OVEN



SECTION THROUGH CHIMNEY

SIDE VIEW



PERSPECTIVE VIEW

PLATE XXVIII

FIG 1—COOKING IN THE FIELD

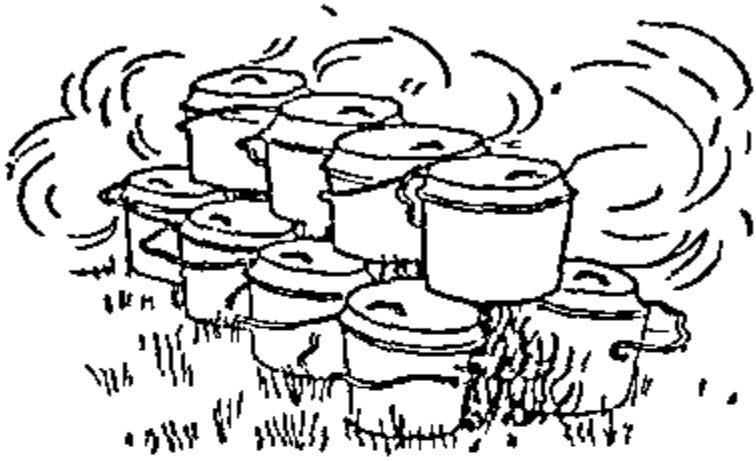


FIG 2—BRAZIER FOR MESS TINS

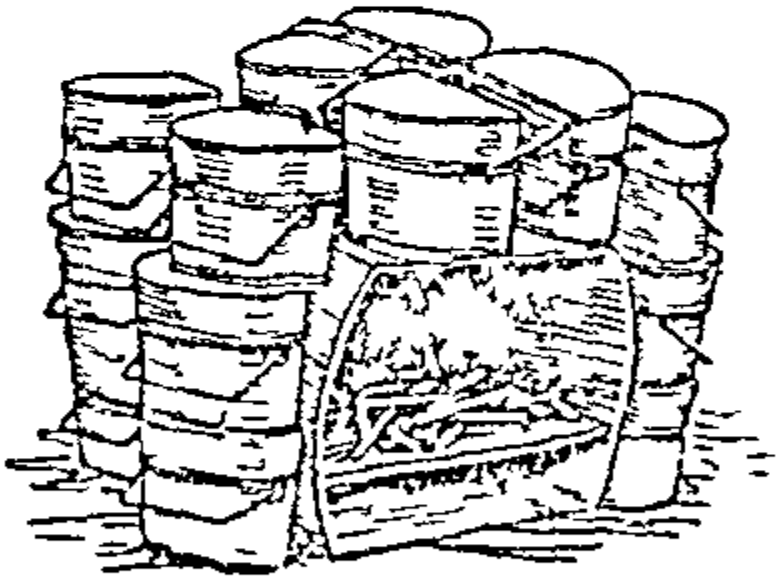


FIG 3—KITCHENS

SECTION OF COOKING TRENCH

Length varies with No of Kettles allowing 8 for every 10 ft

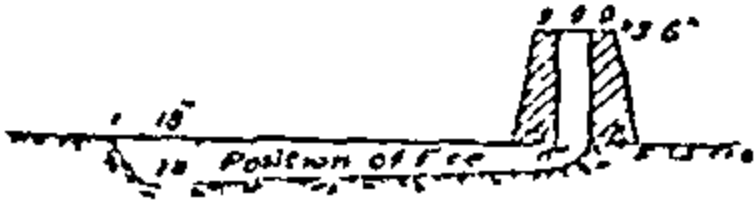
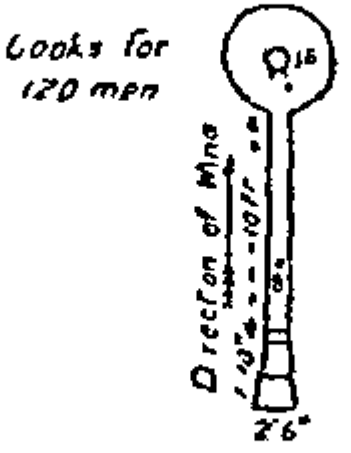


PLATE XXVIII—*continued*

FIG 4.—PLAN OF KETTLE TRENCH



Kettle measures —
1" quarts 9 × 13½ × 11 high

FIG 5.—RAISED TRENCH (WET WEATHER)

FIG 6.—HAY BOX

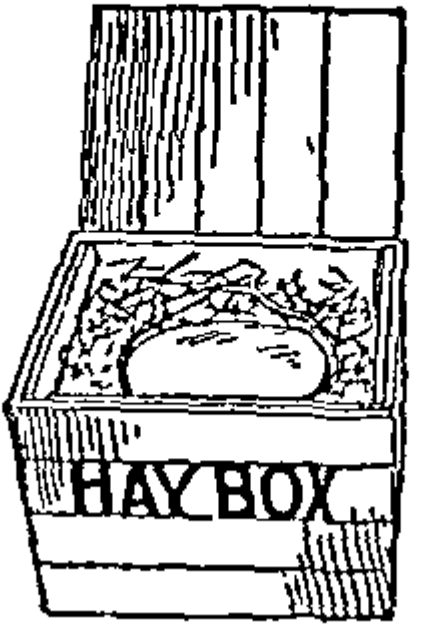
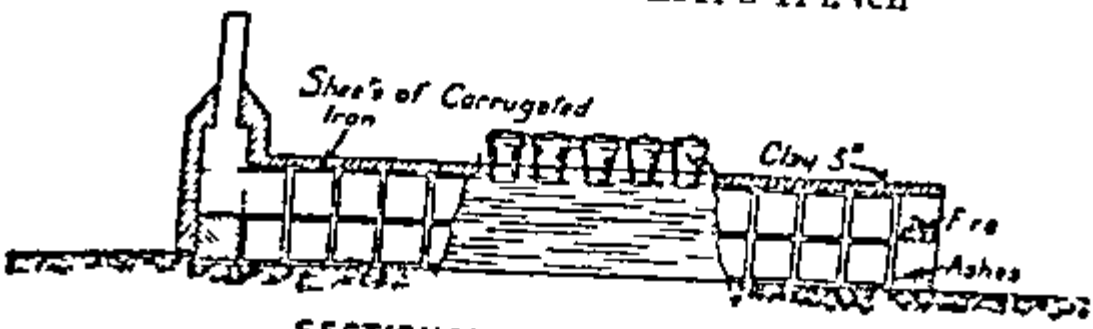
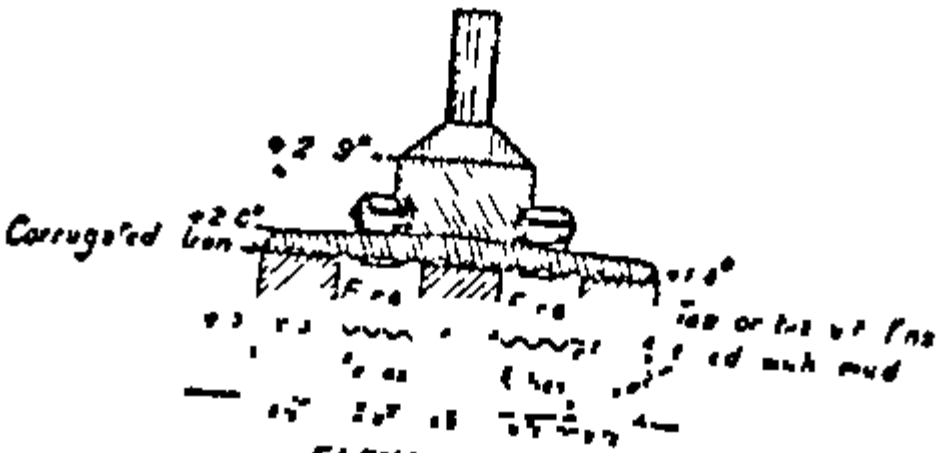


PLATE XXIX

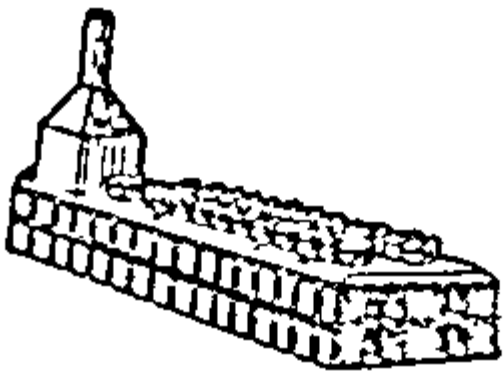
RAISED DOUBLE CAMP KETTLE TRENCH



SECTIONAL ELEVATION



ELEVATION



PERSPECTIVE VIEW

PLATE XXX

PORTABLE FIELD KITCHEN

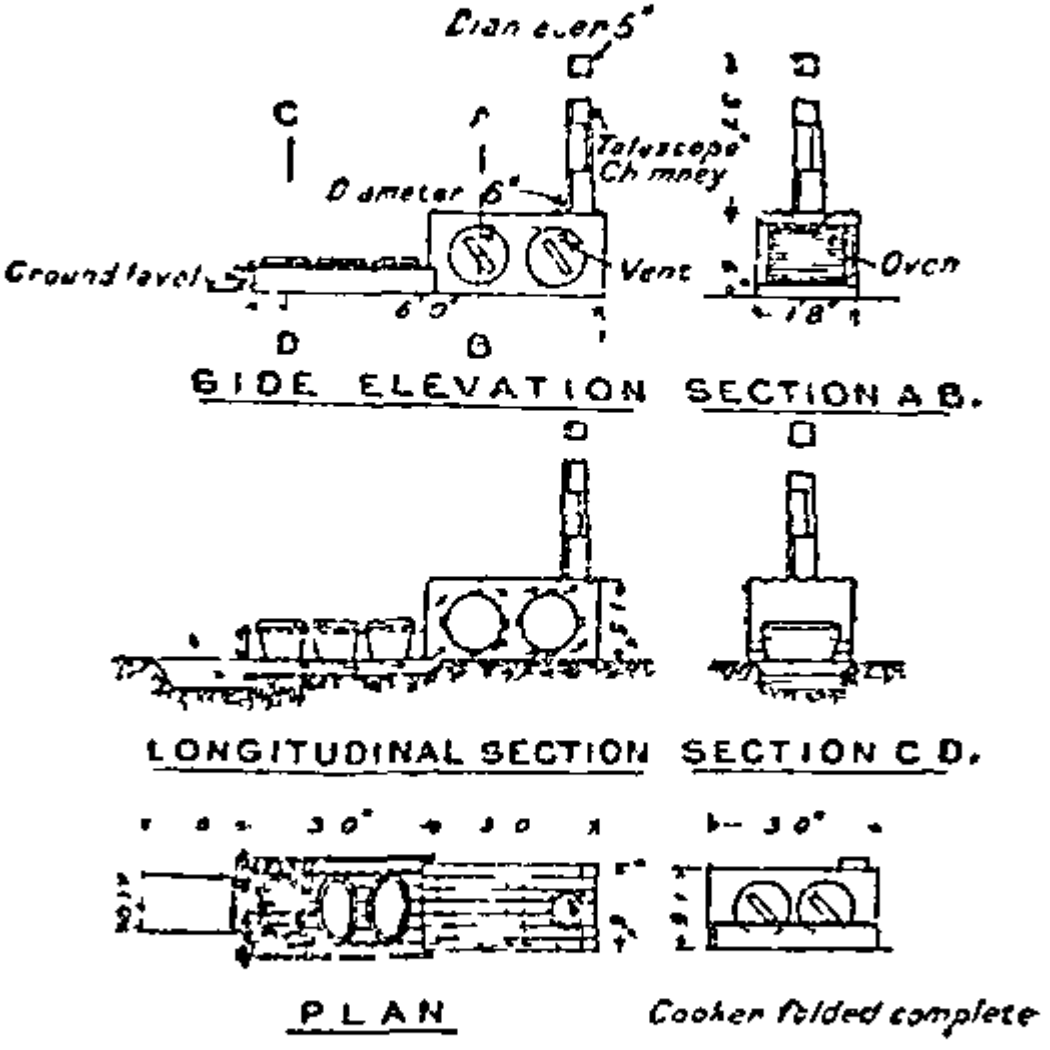
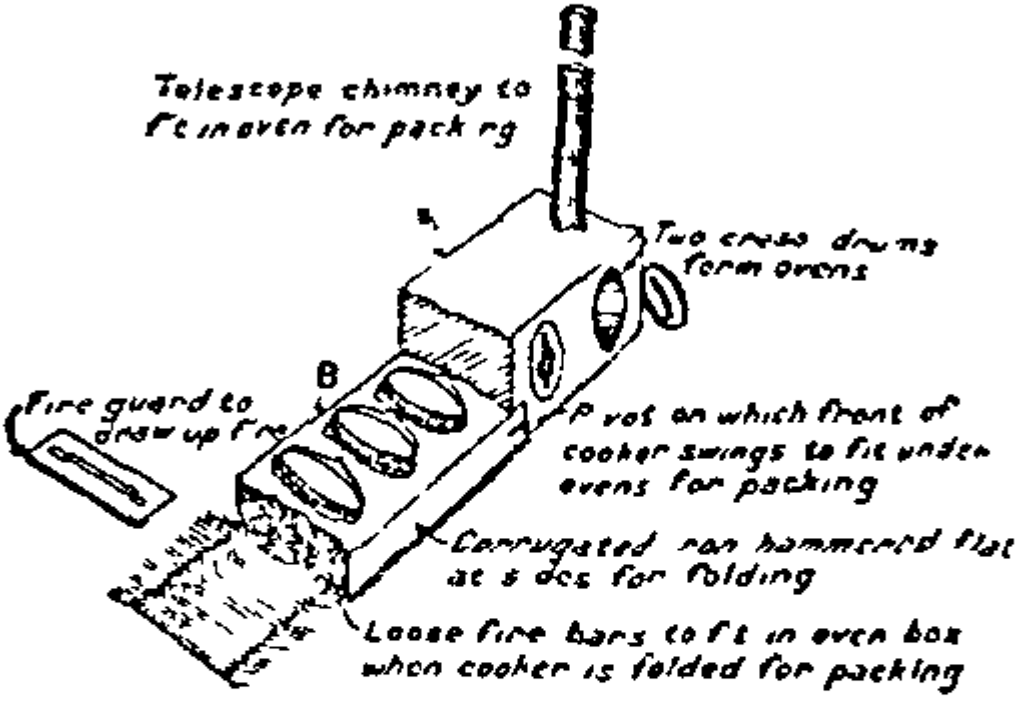
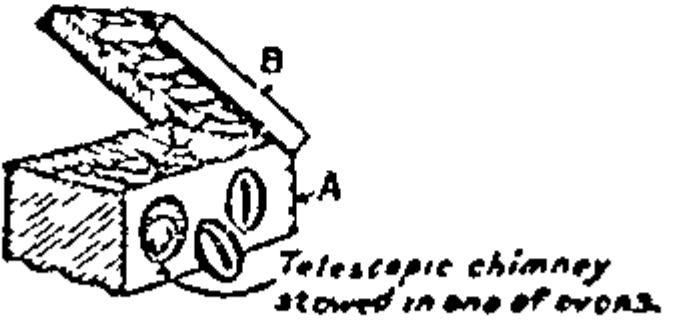


PLATE XXX—continued

PORTABLE FIELD KITCHEN—cont.



PERSPECTIVE VIEW



Method of folding and packing.

34 WATER-SUPPLY

(*See also* Sec 51 Maintenance of Health)

1 A daily average of 1 gallon of water a man is sufficient for drinking and

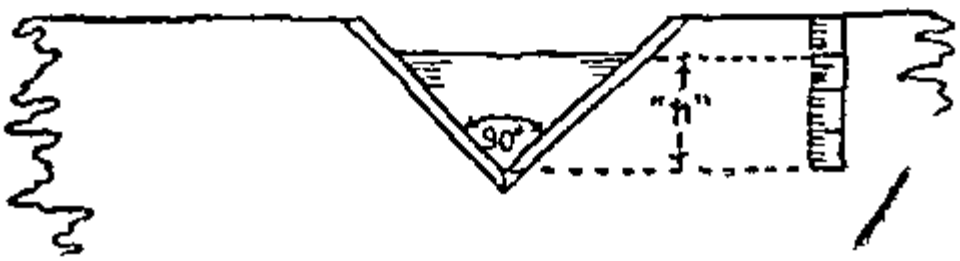
Light tanks		34
Armoured cars	Rolls Royce	9
	Lanchester	15
Tractors	3 ton	14
	30-cwt	8

One cubic foot of water = 6¼ gallons (a gallon = 10 lb)

Inches	0	⅛"	¼"	⅜"	½"	⅝"	¾"	⅞"
1	1 87	2 5	3 25	4 15	5 17	6 3	7 6	9
2	10 6	12 3	14 25	16 3	18 7	21	23 5	26 5
3	29 5	32 5	35 7	39 3	43	47	51	55 5
4	60	65	70	75	80 5	86 2	92 5	98
5	105	111	118	125 5	133	141	149	157 5

A portable V notch should be made up before starting on any extensive water supply reconnaissance Fuller details will be found in Military Engineering Volume VI

FIG 16



PORTABLE "V" NOTCH

3 The quantity of water in a well may be estimated by the following formulæ :—

i In the case of a rectangular well —
Length (in feet) × breadth × depth × 6¼ = gallons

ii. Where the well is circular —
Diameter (in feet)^2 × $\frac{11}{14}$ × ¼ × depth of water in feet × 6¼ = gallons.

4 The yield of a well may be estimated as follows —

i Note the level of the water in the well
ii Pump out enough water to lower the level, say, 3 feet
iii Note the time taken to fill up to the former level

Then cross sectional area of well multiplied by difference between the two levels in feet, multiplied by 6¼ and divided by the time taken to regain former level in hours gives the yield in gallons an hour

PURITY OF WATER

[illegible]

9 Storage tanks used for drinking water should be raised off the ground, kept covered and when possible provided with pipes and taps These tanks as also water-carts water bottles and other receptacles, require periodical cleansing with a strong solution of water-sterilizing powder, followed by free flushing

10 Posts on the L of C should arrange to have enough sterilized water on hand to supply the wants of detachments passing through, particularly at entraining halting and detraining stations on a railway route

WATERING ARRANGEMENTS

11 As a rule the military police or otherwise the first troops to arrive at a halting ground will mount sentries on all water likely to be required for use with such orders as will prevent any form of pollution These sentries will not be withdrawn until permanent water guards are detailed The water

supply will be selected in consultation with a medical officer or an O C. sanitary section.

12 The water-supply should usually be marked with flags, as follows, by the advanced party of engineers —

White for drinking water
Blue for watering places for animals
Red for washing or bathing places

13 If water is obtained from a stream horses will be watered below the [illegible]

animals

16 The following table shows pumps waterproof tanks and waterproof troughs carried by various units (exclusive of power pumps carried by divisional engineers) —

Carried by (1)	Troughs water proof (2)	Troughs, water (3)	Pumps, lift and force (Mark V) (4)
	(a)	(b)	(c)
H Q Cav Division	1	—	1
H Q Brigade R H A	2	—	1
Battery, R H.A	—	—	1
Field Squadron R E	4	—	4
Cavalry Regiment . .	3	—	3
Cav Mobile Vet Section	2	2	—
H Q Infantry Brigade	1	—	1
H Q Field Brigad R.A (horsed)	2	—	2
Field Company, R E .	1	—	4
Field Park Company, R E	6	—	6
Mobile Vet Section .	2	2	—
Army Troops Company R E .	6	—	6
Boring Section R.E . . .	—	—	5
Remount Squadron .	3	—	3
Veterinary Evacuating Station .	2	—	2
Veterinary Hospital . . .	8	—	4

[illegible]

17 *Horse watering points* —The following should be remembered —

i The water should be fenced off at its source
ii Trough guards should be 1 foot higher than and 1 foot clear of the troughs
iii Horse water points should never be placed at the side of a traffic route
iv Horses should not have to cross or use a traffic route in order to reach the water point.

[illegible]

provided.

A unit consisting of one trough waterproof 600 gallons and one lift and force pump will provide for 140 to 200 horses an hour

CHAPTER VIII.

MOVEMENTS BY SEA, AIR AND RAIL

35 CONTROL OF MOVEMENT

[illegible]

i [illegible]

ii [illegible]

iii To deal with demands for conveyance and questions of priority in despatches

iv To control embarkations and landings when not the responsibility of the general staff as a matter of actual military operations

v To make arrangements to ensure the best possible conditions for the health and comfort of personnel and animals during long-distance movements

vi To control the military forwarding organization

3 The organization of the services concerned in movement will be found in F.S R., Vol I and in F S R Vol I, Additions for India (See also F S R, Vol II, and the Manual of Movement)

36. MOVEMENTS BY SEA.

GENERAL

1 The control, provision and despatch of transport necessary for the [illegible]

[illegible] of troops and animals or quantities of

4 A "*long sea*" voyage is generally regarded as one for which ships, when taken up by the Board of Trade or P S T O require extensive alterations in accordance with a special specification in order to render them serviceable, from a military point of view, for the conveyance of troops and animals overseas

[illegible]

5 Information as to the draught, length and breadth of vessels in relation to tonnage is given in the following table —

Draught (1)	Length (2)	Breadth (3)	Gross tonnage (4)	Net tonnage (5)
Feet	Feet	Feet	Tons	
15	230	33	1 000	Average 60 per cent of the gross tonnage
19	280	39	2 000	
21	330	44	3 000	
23	360	48	4 000	
25	390	51	5 000	
26	420	53	6 000	
27	440	55	7 000	
28	450	57	8 000	
28	460	58	9 000	
29	470	59	10 000	

The trooping draught will probably be about 15 per cent. less than the figures given above

Tonnage Definitions

6 *Gross tonnage* is the figure obtained when the capacity in cubic feet of all closed spaces in the ship above the inner bottom is divided by 100

Net tonnage is the gross tonnage less the closed in spaces necessary for the [illegible]

Dead-weight tonnage is the total weight of cargo, bunkers and stores a ship can carry.

Commercially freight is [illegible]

Tonnage Calculations

7 The measurement tonnage allowance for troops will vary according to the length of the voyage, route taken and season of the year The following data will, however, be useful as a guide to the scale of gross register tonnage

required In each case a margin is allowed for a certain amount of stores, coal ammunition and vehicles

	Long sea voyages	*Short sea voyages*
For each man	5	3 5
For each horse	10	9

8 As regards the tonnage required for guns vehicles etc., the stowage of [illegible] of one size

The space required for the various vehicles in common use can be obtained from the tables given in Secs 41 and 4[illegible] whilst the table in paragraph 9 [illegible]

Article (1)	Equivalent measurement tonnage per ton dead weight (2)	
	Tons	Cubic feet.
Aeroplane engines	4	—
Ammunition (filled shell)	—	27
Ammunition (S.A.A.)	1	—
Building material and other stores	1	14
Cheese *	1	30
Clothing	3	—
Coal	1	5
Coke	2	—
Flour	1	10
Furniture	17	—
Hay (steam pressed)	4	5
Hay (hydraulically pressed)	2	10
Mails	5	—
Meat.—		
Beef	2	10
Mutton	3	—
Miscellaneous M T stores	4	—
Miscellaneous other stores	2	—
Oats	2	—
Other rations	2	—
Ordnance stores	2	—
Petrol and lubricating oil	1	20
Potatoes	2	—
Rails	—	13
Sugar	1	20
Timber	3	—
Tyres (pneumatic)	5	—
Tyres (solid)	3	—
Wagons (in components)	2	—

The above figures are explained by the following example —

* 1 ton avoirdupois of cheese measures 70 c[illegible] measurement or freight tonnage would be 1 cubic feet or 1 30/40 tons shipping

10 The general information given in paragraphs 11 to 17, below, is included in this book for the guidance of officers called upon at short notice to undertake duties in connection with the shipment of personnel, animals, vehicles, etc It should be borne in mind however, that full details concerning embarkations etc , are to be found in the Manual of Movement and reference should always be made to this publication where copies are available

EMBARKING

[illegible]

vi Baggage party stow rifles (without slings) properly labelled in the armoury, if there is one ammunition in the magazine, and accoutre-

[illegible]

label)

xiii See to safe stowing of vehicles

[illegible]

x [illegible]

xviii Acquaint troops with ship's orders alarm signals etc

SLINGING HORSES ON TO A SHIP

12 Horses should be unsaddled and unharnessed, ship's halter under head-collar, bridoon reins loose but knotted

Do not let the horse s head loose, fasten with double guy, one end being held on shore or in the boat and one on the ship Horses may fall backwards out of slings, but will never fall forward

Five men required one at head, one at each side one at the breast and one behind

Pass one end of sling under belly, both ends being brought up to meet over back; one man passes his loop through the other loop, and it is received

[illegible]

HORSES ON BOARD SHIP—POINTS FOR ATTENTION.

13 i Feeding Average ration half and half, at first few oats and much bran gradually increase oats Full ration of hay all through

ii Clean ship frequently Exercise on deck in fine weather Cinders spread will give horses foothold

iii

iv

v

vi

SLINGING CAMELS ON TO A SHIP

CAMELS ON BOARD SHIP—POINTS FOR ATTENTION

1

exercised

vi During the voyage great care should be paid to the bend of the knees and hocks The sand the animals lie upon works into these parts and if they are kept sitting for long periods it causes irritation and the formation of ulcers

SLINGING GUNS AND HORSE DRAWN VEHICLES

16. For slinging guns and limbers the following method has been found to work well.

Two slings are used one round each axle-tree and a hook rope hooked into the trail-eye The bights of the sling are placed on the tackle hook to which the end of the hook rope is also made fast

Limbers have their poles removed and are slung in the same way the hook rope in this case being made fast to the tackle hook from hook

G S wagons and pontoon wagons can be slung by four chain nected to a common link at one end and provided with hooks at these four hooks are then secured to all four wheels of the vehicle.

SHIPMENT OF M.T VEHICLES

17. i. *General*—The embarkation, stowage, etc., of M.T. vehicles will usually be carried out under the supervision or direction of a repre-

come damaged

iii *Embarkation*—Where embarkation is at a fully equipped and

37. MOVEMENTS BY AIR

38 MOVEMENTS BY TRANSPORTATION SERVICES.

MOVEMENTS BY RAIL.

(See F S R., Vol. I, and Additions for India, F S R., Vol II, and Manual of Movement)

GENERAL.

2. i Railway transport officers are the local representatives of the movement section of the staff

These officers are the intermediaries between the troops and the technical railway authorities.

ii The following are some of the points which have to be observed by the troops —

(a) Railway arrangements must not be interfered with except for essential tactical reasons

(b) All rolling stock must be unloaded with as little delay as possible

(c) Troops must not occupy railway buildings or use the railway water-supply without the authority of a movement staff officer

(d) Troops must not take tarpaulins coal wood or other railway property

(e) Staff officers and advance parties should be sent ahead of formations to make arrangements for the troops in the area to which they are moving

Movement of Troops

3 There are four kinds of trains for carrying units and personnel .—

i. *Strategical* —Carrying a unit or sub-unit complete with weapons animals horse transport and tracked vehicles (M T vehicles will almost invariably go by road.)

ii. *Tactical* —Carrying the dismounted personnel of a unit with a minimum of its transport only the remainder going by route march Their use is limited to a distance that can be covered by the remainder of the unit in a two days march

iii. *Hospital*

iv *Miscellaneous* —Carrying reinforcements leave personnel prisoners of war etc

Rolling Stock

4 In Great Britain coaches are normally used for personnel cattle trucks for animals and carriages or flat wagons or goods wagons with drop sides or [illegible]

5 6" broad gauge 3 -3½" metre gauge and 2 6" or 2 narrow gauge

5 The dimensions and capacity of rolling stock on Indian broad gauge railways vary The following particulars are a general guide —

(a) Coaching Stock

The following is the average capacity of various classes of broad gauge coaching stock Practically all is non corridor

(i) *First and Second Class stock*—

	Passengers (sleeping accommodation)
First class four wheeler	8—1st Class.
First class bogie	16—1st Class
Composite four wheeler	4—1st Class 5—IInd Class
I and II class composite bogie	8 to 10—1st Class 10 to 14—IInd Class
Second class four wheeler	10—IInd Class
Second class bogie	18 to 28—IInd Class

(ii) *Third class stock* —Public IIIrd class coaching stock is mostly used for troops This has an average capacity of 50 passengers in a four wheeler or 100 in a bogie sitting accommodation Military capacity is calculated at 2/5ths of public capacity for British troops and 3/5ths for Indian except for hot weather journeys exceeding 700 miles when it is 2

[illegible]

(b) Animals and Vehicles

(i) A horse box has padded partitions and is normally used for officers' chargers Capacity 6 horses

(ii) A horse wagon has wooden floors and carries 8 horses or 10 mules or ponies [illegible]

(c) Ammunition Stores and Supplies.

The average carrying capacity of a covered 4 wheeler goods wagon in India is about 20 tons (540 maunds) of coal or stone [illegible]

Commodity	Average actual load for each ton of stated carrying capacity Tons weight
Ammunition coal road stone ballast sand cement scrap iron lead	1
Railway material (excluding ballast)	9
Ordnance stores (general)	5
Engineer stores (general)	7
Clothing troops kits	5
Medical stores	8
Supplies—	
Sugar beans etc	9
Case goods potatoes etc.	8
Frozen meat flour	7
Biscuits, bread	6
Forage—	
Oats gram barley	8
Compressed bhoosa	25
Baled hay and bhoosa	2
Firewood	6
Petrol in tins	3
Timber (scantling) hut sections	6
Coke	6
Malts, M F O stores canteen stores etc	5

Tare weight is the weight of a wagon empty Capacity or load weight is the weight that a wagon may carry Gross weight is tare plus load and fixes the weight of a train.

(d) Metre and Narrow Gauge Stock

Metre gauge stock has a capacity of approximately 2/3rds of that of similar broad gauge stock.

Narrow gauge stock owing to variety of types cannot be compared in detail but it generally requires three narrow gauge trains to clear one broad gauge train whether of troops, animals or stores

MAKE UP OF TRAINS

6 For climatic and other reasons type trains are not used in India. The [illegible]

Number of Broad Gauge trains required to move certain formations and units

	Trains
(a) *A Division*—	
With M T requires	70
Without M.T	55
(b) *A Cavalry Brigade*—	
With M T requires	24
Without M.T	16
(c) *An Infantry Brigade with A T Coy* —	
Infantry Brigade Headquarters Supply Issue Section Field P O British Infantry Battalion Brigade Signal Section	2
3 Indian Infantry Battalions	3
Infantry Brigade A.T Coy (mule)	1
Total Infantry Brigade	6
Field or Mountain Brigade R.A Signal Section etc —	
Brigade Headquarters and one Battery	2
3 Batteries	3
Total	5

(e) *Units* —With unit transport only Attached transport normally travels as a unit (A.T Coy).

	Total load in terms of four-wheelers	Trains
British Cavalry Regiment	121	3
Indian Cavalry Regiment	104	3
Field Battery R.A (horsed)	42	1
Light or Mountain Battery	33 or 56	1
Medium Battery (mechanized)	61	2
British Infantry Battalion	64	2
Indian Infantry Battalion	36	1
Field Company S & M	26	1
Field Ambulance	26	1
Light Tank Company	64	2
M T Section	34	2
A T Company	45	1

General Rules for Entraining

7. i Send an officer ahead to ascertain facilities for entraining
ii Tell off parties to entrain horses, guns and wagons
iii Entrain baggage, horses guns and wagons simultaneously, before troops arrive if possible
iv Detail men in charge of trucks containing horses or vehicles

Entrainment of Horses or Mules

8 Under active service conditions horses will be entrained saddled or harnessed, pack saddles only being removed, unless orders to the contrary are issued

i On long journeys under peace conditions saddlery and harness may be removed at the discretion of the officer under whose authority the

iv To prevent delay at places where horses are to be fed nosebags should be filled before starting. Hay or straw should be loaded up separately and covered for fear of fire

Entrainment of Vehicles.

9 Vehicles can be either side-loaded or end loaded The method used will depend on the facilities which exist or can be provided at an entraining station

10 *Side loading* —This method is suitable and is the quickest for all vehicles that can be man handled *e.g.*, field guns, limbers G S wagons, pontoon wagons and all two-wheeled vehicles

Requirements —A platform the level of which is approximately that of the floor of the rolling stock (about 4 feet on an average) and a minimum

[illegible] as strategic gap on emergency.

[illegible]

Where the type of rolling stock permits, vehicles will move along the train, as previously detailed under their own power This saves shunting of individual trucks as they are loaded but is not permissible for all types of rolling stock.

Times for Entrainment of Units

12 Under favourable conditions i.e., high level platforms and other [illegible]

Rules for Detraining.

13 i. Ascertain arrangements for detraining and clearing the railway station before troops leave carriages

ii Detail unloading parties for animals, vehicles and baggage.

iii. Detrain animals, guns, vehicles and stores simultaneously when possible.

iv. All personnel, animals and vehicles to be moved clear of the station and immediate approaches as soon as possible to the place of assembly outside

Movement of Stores by Rail

14 There are two kinds of trains for movement of stores —

[illegible]

Capacity of Trains

[illegible]

iii. In India apart from any particular limitations as to length or weight of a train on certain sections of railway, which must be ascertained locally a broad gauge troop train or goods train is limited to 45 loaded four wheeled vehicles or 22 bogies excluding brake vans

MOVEMENT THROUGH DOCKS

16 *Dock capacity*—The principal considerations governing the capacity of a dock are:—

iii. Liability to interruption by weather or tides
iv Rail connections as affecting the rapid transit of material through the dock area
v The possibility of increasing the existing capacity firstly by the addition of extra equipment and to existing quays and secondly by the construction and equipment of new quays if required

18 *Discharge of British Army traffic at French ports in 1917 and 1918*—

	1917 Tons an hour	1918 Tons an hour
i. Each vessel an hour in port	20	30
ii. Each vessel a working hour—		
Average for all traffic	36—45	47—62
Ammunition	60—76	60—76
Bulk oats	42—59	65—119 (by pneumatic elevator)
Coal	27—61	40—80
Engineer stores	18—28	30—45
Food supplies	42—57	48—60
Hay	40—51	46—74
Ordnance stores	23—41	37—42
iii For each stevedore an hour discharging All traffic	1·05–1·25	1·10–1·60
iv For each shore labourer an hour All traffic	0·48–0·57	0·59–0·68

v 1 to 1·2 tons discharge for every lineal foot of quay for each shift represented the average of a good working day for all ports used for the British Army

CHAPTER IX.

WEAPONS AND EQUIPMENT

39. SMALL ARMS.

1 *Rifles No 1, Mark III (with cut-off) and Mark III* (without cut-off)* —

Weight without bayonet	8 lb 10½ oz (Mk III*—9 lb 0 oz)
,, with ,,	9 lb 11½ oz (Mk III*—10 lb 1 oz)
Length without ,,	3 feet 8½ inches
,, with ,,	5 feet 1 7/10 inches

2 *Pistols Revolvers, No 1, Mark VI (·455 inch)* —

Weight	2 lb 6½ oz
Length	11½ inches
,, diagonally	12½ ,,
Depth	5½ ,,

3 *Light automatics* —

303 INCH LEWIS MACHINE GUN, MARK I

Weight of gun about 27 lb length, 50½ inches, barrel—26½ inches, riding right-handed, number of grooves—4 Gas-operated and air-cooled

Weight of gun and mounting —

Mount, field Lewis 303 inch M G Mark III—29½ lb
Mounting tripod A A Lewis or Hotchkiss 303 inch M G and holder—44½ lb

Weight of magazine empty—1½ lb, full (47 rounds)—4½ lb
Weight of set of carrier, pouches magazine and braces—3 lb 14 oz

4 *Machine guns* —

303 INCH VICKERS MACHINE GUN, MARK I

[illegible]

5 *Small Arms Ammunition* —

MARK VII 303 INCH AMMUNITION

[illegible]

MARK VIIz 303 INCH AMMUNITION

Cartridge—Weight 385 grains (20 rounds in chargers, about 2 length, 3 037 inches
Bullet—Length 1 28 inches weight 174 grains.
Charge—N C (Z) about 41 grains
Muzzle velocity.—2 440 feet a second

MARK II .455-INCH AMMUNITION

Cartridge —Weight 337 5 grains (12 rounds in carton, about 10 oz)
Bullet.—Length 875 inch , weight, 265 grains
Charge.—Cordite about 8 0 grains.
Muzzle velocity —610 f/s

6 *Grenades* :—

i. Grenades in use (for 2½ inch discharger) —

No 36 (or 36M) Mark I—Weight, filled about 1½ lb
Grenades percussion 2 inch —
No 54 Marks I and II Weight, filled without safety cap, about 17½ oz
No 55 . Weight, filled without safety cap, about 1 lb

INSPECTION PRIMING AND STORAGE OF GRENADES

Inspection

ii No 36 (OR 36M), MARK I —

(a) Necessary to guard against failures and "prematures"
(b) Examine Pin—Wax—Spring—striker way All tested by striker test.
(c) Examine outside of body
(d) Examine filling screw
(e) Inside (i) Striker with 2 nipples and gas slot e ear
(ii) Obstructions in sleeves
(iii) Crack in wall between sleeves

Detonator or Burster

(f) See that the filling appears to be undisturbed (visually only)

iii. IGNITER SETS —

Priming

iv No 36 (or 36M) MARK I —

Storage

v The following details will be observed —

(a) Stacked in small groups not exceeding 5 feet in height—Should have air space between groups and be raised from ground on battens
(b) Store should be at least 50 yards fr m roads or houses
(c) Smoke *grenades to be stored away from* other material
(d) Detonators detonator sets burster sets to be stored in a separate compartment
(e) Signal grenades cartridges illuminating 1 inch (Very lights) and rockets to be stored in a separate compartment.

(f) Care to be taken that all stores are kept dry and well ventilated.
(g) No smoking or striking of matches near a store containing explosives.

vi. Discharger Grenade Rifle 2½ inch No 1, Mark I (weight 2½ lb) —

Gas Port—

	Yards range
Full open gives	80
Three-quarters open gives	110
Half open gives	140
Quarter open gives	170
Closed gives	200

N.B —Adjusting screw must be thoroughly cleaned after firing to prevent seizing

vii. Discharger Grenade, Rifle, 2-inch, No 1, Mark I (weight, 2 lb 8 oz.) —

Gas Port—
Upper range scale, for "H. E." grenades calibrated from 100 to 2[illegible] yds.
Lower " " "S" " " 100 to 210 yds.

7 *Range cards* —

i. All ranges however obtained should be at once recorded on a range card The range card is an article of store and will be carried in the field. (Plate XXXI Fig 1)

Range card as issued —It should be noted that the card is marked with four equidistant semicircles which can be used to represent any series of ranges up to 2 000 yards according to whether they are for use by a rifle light automatic or machine-gun fire unit.

ii. [illegible]

(d) Keeping the card on the setting rav draw [illegible]

iii. In use the range card is set by raising the card to [illegible]

iv [illegible]

8 *Notes for guidance in inspecting small arms* —

i. *Rifles* —

Barrel.—Chamber and bore should be clean and bright Look for bulges, deep scratches, and rust pits

Sights —Leaf firm and not bent Slide working freely Fore sight not loose or burred

MARK II 455-INCH AMMUNITION

Cartridge —Weight 337 5 grains (12 rounds in carton, about 10 oz)
Bullet —Length 875 inch weight 265 grains
Charge – Cordite about 6 0 grains
Muzzle velocity —610 f/s

6 *Grenades* :—

I Grenades in use (for 2½ inch discharger) —

[illegible]

safety cap

[illegible]

safety cap.

INSPECTION PRIMING AND STORAGE OF GRENADES

Inspection

II No 36 (OR 36M), MARK I —

(*a*) Necessary to guard against failures and prematures "
(*b*) Examine Pin—Wax—Spring—striker way All tested by striker test
(*c*) Examine outside of body
(*d*) Examine filling screw
(*e*) Inside (i) Striker with 2 nipples and gas slot c ear
(ii) Obstructions in sleeves
(iii) Crack in wall between sleeves

Detonator or Burster

(*f*) See that the filling appears to be undisturbed (*visually only*)

III IGNITER SETS —

[illegible]

Priming

IV No 36 (or 36M) MARK I —

[illegible]

Storage

V. The following details will be observed —

(*a*) Stacked in small groups not exceeding 5 feet in height—Should have air space between groups and be raised from ground on bat ens
(*b*) Store should be at least 50 yards fr m roads or houses
(*c*) Smoke grenades to be stored away from other material
(*d*) Detonators detonator sets burster sets to be stored in a separate compartment
(*e*) Signal grenades cartridges illuminating 1 inch (Very lights) and rockets to be stored in a separate compartment.

(*f*) Care to be taken that all stores are kept dry and well ventilat
(*g*) No *smoking* or *striking of matches* near a store containi explosives

vi. DISCHARGER GRENADE RIFLE 2¼ INCH NO 1, MARK I (weight lb) —

Gas Port—

	Yards range
Full open gives	80
Three quarters open gives	110
Half open gives	140
Quarter open gives	170
Closed gives	200

N.B —Adjusting screw must be thoroughly cleaned after firing to prev seizing

vii. DISCHARGER GRENADE, RIFLE, 2 INCH, NO 1, MARK I (weight, 2 5 oz.) —

Gas Port—
Upper range scale, for H E grenades calibrated from 100 to 325 y
Lower „ „ "S" „ „ 100 to 250 yd

7 *Range cards* —

i All ranges however obtained should be at once recorded on a ra card The range card is an article of store and will be carrie the field (Plate XXXI Fig 1)

Range card as issued —It should be noted that the card is marked w four equidistant semicircles which can be used to represent any series of ran up to 2 000 yards, according to whether they are for use by a rifle, li automatic or machine gun fire unit

ii. The successive steps in filling in a range card are as follows —

(*f*) Write the distance to each object against the description
(*g*) Sign and date the card, and state how the ranges given w obtained

iii In use the range card is set by raising the card to the level of the

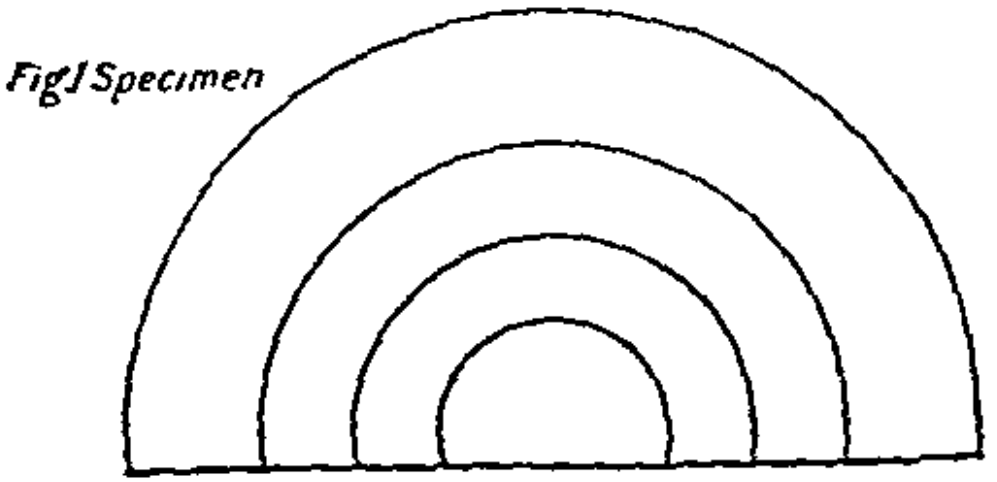
iv

8 *Notes for guidance in inspecting small arms* —

i. *Rifles* —
Barrel —Chamber and bore should be clean and br for bulges, deep scratches and rust pits
Sights —Leaf firm and not bent Slide working free sight not loose or burred 1

PLATE XXXI.

RANGE CARDS.



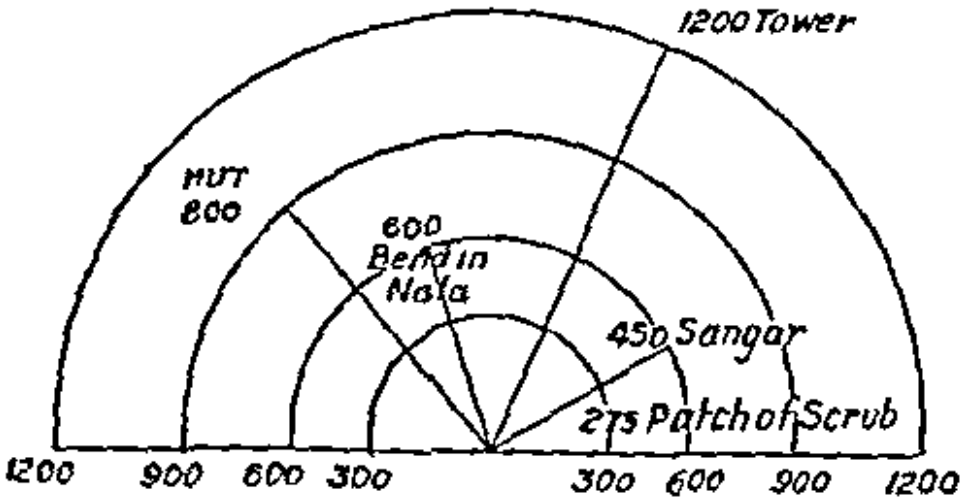
Point from which made out :—
Method of obtaining ranges :—
Made out by —

Date

RANGE CARD

Ranges suitable for a rifle or Light Automatic Section

Fig 2



Point from which made out
Method of obtaining Ranges
Made out by J Wilson L/Cpl
2nd P W O

SANGAR at Northend of PIRGUI
Judged by eye
Section
average

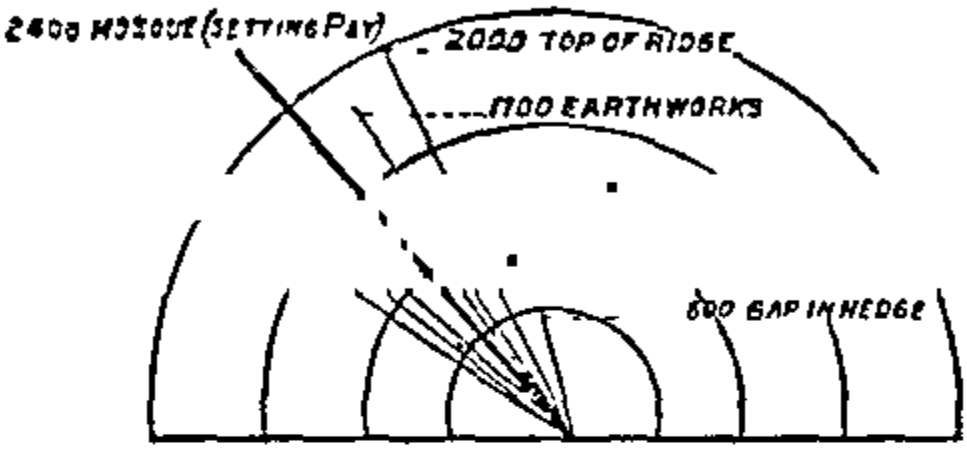
Date 30 May 34

PLATE XXXII

RANGE CARDS

TRUE ANGLES—Too close together for use

FIG 1.



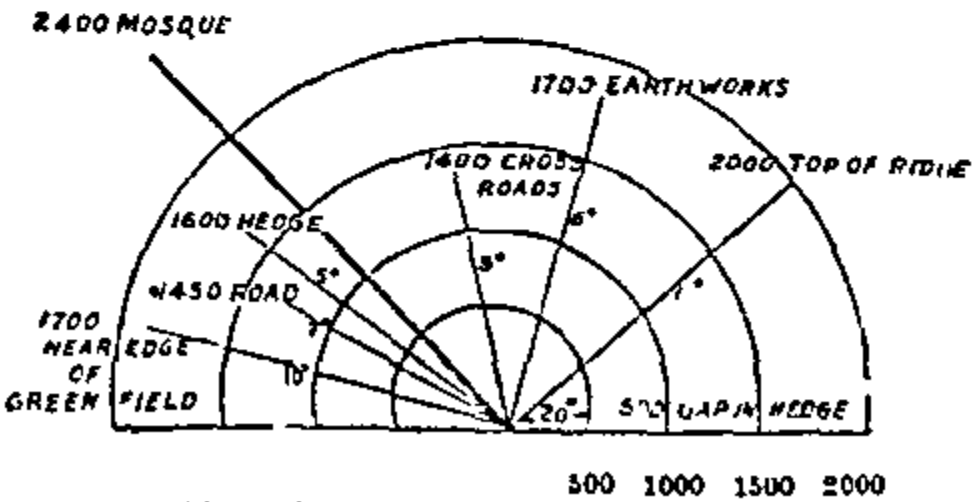
Point from which made out
Method of obtaining ranges.
Made out by —

Date.

RANGE CARD.

ANGLES OPENED OUT—Ranges suitable for a Machine Gun Section.

FIG 2



Point from which made out
Method of obtaining ranges
Made out by —J Brown L/C
M G Co, 1 R S F

Track Junction P-6126.
Range finder

Date

Action —Bolt and body numbers should agree Bolt working [illegible]

Oiling —Normally all exposed working parts of the rifle will be kept oiled, but in dry and sandy countries it may be necessary to keep the action free from oil The bore will be kept oiled whenever possible Internal working parts will always be oiled

ii *Light automatics (Lewis)* —

Barrel —As for rifle
Sights —As for rifle
Breech mechanism —Should be clean and work smoothly and freely Look for signs of burring or other damage Examine extractors and point of striker Test working of trigger
Gas cylinder regulator, piston —Gas passages clear, no excessive hard fouling
Feed mechanism —Examine feed and stop pawls, cartridge guide spring and ejector for damage and correct assembly Test with [illegible]

iii. *Machine guns* —

Barrel —As for rifle
Sights —As for rifle
Lock —Mechanism clean and working smoothly Look for burring or other damage Examine point of striker Test working of sear and trigger
Feed block —Pawls and springs in order and the whole working freely
Mounting —Gun joints clean and not distorted or burred Direction dial and pointer undamaged and secure Joint pins clean securely attached and leg clamping screws working properly All [illegible]

iv *General* —

In cold weather —At low temperatures lubricating oil congeals and may cause stoppages In water-cooled guns the water may freeze

Precautions —Apply oil sparingly wipe off excess when gun is warm. In extreme cases oil may be diluted with not more than

40 DEFENCE AGAINST GAS.

(Further details are given in ' Defence Against Gas ")

Care of the Respirator

1 The respirator gives complete protection for the eyes and lungs if the

i Water entering the container and affecting the efficiency of the chemical filling, therefore the container should be protected from

repairs

Mal adjustment of this valve will cause serious leak into the face-piece

vi Dents in the container seriously increase resistance to breathing. Avoid rough usage as far as possible

Protection of Weapons and Ammunition

2 Certain gases, more likely to be encountered in stabilized operations than in mobile warfare have a corrosive action on metal In the event of a gas attack ammunition and belt boxes should be kept closed and weapons covered

Hands and nails should be scrubbed in soap and water or dipped in clean petrol or paraffin after the cleaning operations referred to above have been completed

Wooden cases heavily contaminated with mustard should be burned It is important to remember that the handling of materials splashed with liquid mustard gas or contaminated with earth from mustard gas shell bursts will result in casualties unless gloves or improvised protection are used before decontamination is carried out

Precautions with Reference to Food and Water

3 Normally all food whether for human or animal consumption and water should be kept covered Any food which possesses a peculiar taste or odour after a gas attack should be destroyed

Water from gas shell craters must not be used for any purpose whatever

Dugouts and Shelters

4 The entrances to all dugouts shelters and mine shafts should be [illegible]

Characteristics of Mustard Gas

5 —i Mustard gas is a heavy liquid which evaporates slowly at ordinary [illegible]

(a) The liquid
(b) Ground and articles contaminated by the liquid
(c) Vapour

Both the liquid and the vapour will injure the body The eyes are the most easily damaged part of the body, the lungs next and lastly the skin [illegible]

vii *Delayed signs of burns* —A lapse of some hours (usually four to six) occurs before obvious signs of injury develop The most common skin injury is a redness and inflammation followed by a blister

Hints for Protection against Mustard Gas

6 —i. *Eyes and lungs* —Complete protection is given by the respirator Therefore wear the respirator whenever gas is smelt

ii. *The skin.*—Protection of the skin is difficult, but the following hints are useful —

Do not remain in an atmosphere of mustard gas for any length of time

Do not lie down on contaminated ground If you must lie down use a ground-sheet or substitute to protect from contact with the ground

Do not touch with the bare hands anything contaminated with mustard gas

[illegible]

First Aid Treatment

7 Time is of the utmost importance, never delay in carrying out first-aid measures

Unless the clothes are changed promptly there is a chance of becoming a casualty If no change of clothing is available this chance must be faced If fresh clothing is available remove the contaminated clothing at once and

[illegible]

re issue

Decontamination of Areas.

[illegible]

Units are responsible for rendering safe all areas [illegible] they intend to occupy

41. FIELD GUNS AND HOWITZERS.

(1) *Particulars of artillery weapons used in the Field.*

Particulars.	Q F 13 pr	Q F 18 pr Mks I to II	Q F 18 pr Mk. IV	Q F 3 7" how	Q. F 4 5" how	B L 60 pr Mks II and II*.	B L 6" 26 cwt how	Q F. 3-in. (20-cwt.) A A gun Mk I**
1	2	3	4	5	6	7	8	9
Muzzle velocity (range-table) f s	1,700	1 615	1,615	973	1,010	2,175	1,400	2,000
Calibre . . inches	3	3 3	3 3	3 7	4 5	5	6	3
Weight of projectile, lbs fuzed	12½	18½	18½	20	35	56	86(a)	16
Weight of complete lbs round, approximate	16½	23½	23½	22	38½	66	01½	24½
No of rounds in carriage limber	24	24	24	..	12	..	..	..
No of rounds in wagon	38	38	38	..	16	..	..	..
No of rounds in wagon limber	38	38	38	.	32	..	..	..
No. of rounds on mule . .	..		..	8	..	..	..	..
No of rounds on travelling platform (4 wheeled).	..	..	..	..	..	..	..	40

Maximum elevation (Mounting)	16°	16°	37° 30′	40°	45°	35°	45°	90°
Maximum range H E yds	8 00	9 400	9 400	6 000	6 800	16 000	11 400	18 000(b) 7 000(c)
Maximum range Time shrapnel	6 500	6 600	6 600	6 000		15 100		

(a) 100 lb shell also used but are obsolescent.
(b) Height in feet
(c) Horizontal—yards.

41. FIELD GUNS AND HOWITZERS.

(i) *Particulars of artillery weapons used in the Field.*

Particulars	Q F 13 pr	Q F 18 pr Mks I to II	Q F 18-pr Mk. IV	Q F 3·7" how	Q. F 4 5" how	R L 60 pr Mks II and II*.	R L 6" 26 cwt how.	Q F. 3-in. (20 cwt) A A. gun Mk. I**
1	2	3	4	5	6	7	8	9
Muzzle velocity (range-table) f s	1,700	1,615	1,615	973	1,010	2,175	1,400	2,000
Calibre . inches	3	3 3	3 3	3 7	4 5	5	6	3
Weight of projectile, lbs. fuzed	12½	18½	18½	20	35	56	86(a)	16
Weight of complete lbs round, approximate	18½	23½	23½	22	38½	66	91½	24½
No of rounds in carriage limber	24	24	24	..	12	..	..	..
No of rounds in wagon	38	38	38	..	16	..	..	..
No of rounds in wagon limber	38	38	38	..	32	..	..	..
No of rounds on mule . .	..		..	8	..	..	..	..
No of rounds on travelling platform (4 wheeled)	..	..	..	..	..	..	..	40

Maximum elevation (Mounting)	16°	10°	37° 30′	40°	45°	35°	45°	90°
Maximum range H E yds	8 700	9 400	9 400	6 000	6 800	16 000	11 400	18 000(b) 7 000(c)
Maximum range Time shrapnel	6 500	6 000	6 000	6 000		15 100		

(a) 100 lb shell also used but are obsolescent.
(b) Height in feet.
(c) Horizontal—yards.

Particulars	Q F 13 pr		Q F 18-pr					
			Mk. I carr with or without tanks		Mks I* & II carriage		Mk IV carriage	
1	2		3		4		5	
	Cwt	qrs	Cwt	qrs	Cwt	qrs	Cwt	qrs
Weight with loads								
Gun and carriage	20	0	26	0	27 (a) 26 (b)	2 1 (c)	28 (a)	3
Gun carriage & limber	33	1	40	2	42	3	43	0
Gun and mounting on travelling platform								
Wagon ammunition without limber	16	2	19	3	19	3	19 (a) 18 (b)	3 2 (c)
Wagon ammunition with *limber*	31	3	38	3	38	3	38 (a) 37 (b)	3 2 (c)
Widths	ft	ins	ft.	ins	ft	ins	ft	ins
Gun, carriage & limber	6	3½	6	3½	6	3½	6	3½
Gun and mounting on *travelling platform*								
Wagon ammunition and limber	6	3½	6	3½	6	3½	6	3½
Wheel track	5	3	5	3	5	3	5	3
Lengths								
Gun and Carriage	12	2	14	2	14	2	15	2
Gun carriage and limber without pole	17	2	18	9	18	9	20	2
Gun and mounting on travelling platform								
Limber carriage without pole.	5	3	5	5	5	5	5	7
Wagon ammunition without limber and pole.	8	4	8	5	8	5	8	5
Wagon ammunition with limber (without pole)	13	5	12	11	12	11	13	5
Wagon ammunition with limber and pole	21	4	21	6	21	6	21	6
Heights								
Gun, carriage and limber	4	9	4	9	4	9	5	0
Wagon ammunition and limber	4	8	5	2	5	2	5	2
Gun and mounting on travelling platform								

Equipment used in the Field

Q F 3 How		Q F 4.5 How		B L 6" 26 cwt How (c)		B L 60 pr Mk carr (c)		Q F 3" 20 cwt (c)		Remarks
6		7		8		9		10		11
Cwt	qrs	Cwt	qrs	Cwt	qrs	Cwt	qrs	Cwt	qrs	
14	4	23 (a)	3	88	0	112	0	56	2	(a) With steeltyred wheels
		28 (b) (c)	0							(b) With rubbertyred wheels
		43	3	93	0	120	0			(c) Particulars quoted are approximate only
								120	0	
		24 (a)	2							
		23 (b)	0							
		40 (a)	0							
		39 (b)	0							
ft.	ins	ft	ins	ft	ins	ft	ins	ft	ins	
8 (d)	0	8	3½	8	0	8	0			(d) With shield
4	9							8	0	
		6	3½							
4	0	5	3	6	7	6	7	7	5	
10	10	12	3	17	6	18	4			
		16	8	24 (e)	6	27 (e)	0			(e) With engine draught connector
								19	9	
		5	7	8	0	7 (f)	1			(f) Without engine draught connector
		9	10							
		15	3							
		23	3							
4	5½	4	11½	5	7½	5	2½ (g)			(g) Travelling position
		4	11½	—						
								11	7	

42 ARMOURED FIGHTING VEHICLES

(1) *Weights and dimensions of*

Make	Type	Type of Body	Unladen weights	
			Cwts	Qrs
1	2	3	4	5
Albion	Spl 32	3 ton supply body	93	2
"	I O 32	Ditto	101	0
"	"	3 ton workshop body (complete vehicle)	165	0
"	"	3 ton workshop body (body only)	86	1
"	"	3 ton workshop body (chassis only)	78	3
"	"	3 ton store body (complete vehicle)	139	0
"	"	3 ton store body (body only)	62	1
"	"	3 ton store body (chassis only)	76	3
"	"	3 ton water tank lorry	107	3
"	"	3 ton breakdown lorry	112	0
"	A—10	3 ton supply body	72	3
"	"	3 ton workshop body (complete vehicle)	132	1
"	"	3 ton workshop body (body only)	74	2
"	"	3 ton workshop body (chassis only)	57	3
"	"	3 ton store body (complete vehicle)	89	0
"	"	3 ton store body (body only)	31	1
"	"	3 ton store body (chassis only)	57	3
"	"	3 ton petrol tank lorry	90	2
"	"	3 ton break down lorry		
"	"	3 ton X ray body (complete vehicle)	101	3

AND TRANSPORT VEHICLES

mechanical transport vehicles

Height of vehicles with wheels removed and on blocks		Over all dimensions						Height cut down		Loading index
		Length.		Width.		Height Standing				
6		7		8		9		10		11
ft.	ins	ft	ins	ft	ins	ft	ins	ft	ins	
9	0	20	5	7	7	9	11	8	3	8
9	0	*0	*	7	1	9	11	8	3	8
9	11	20	0	7	3	10	10½			2
		12	6	6	6½	7	11½			9
		20	0	7	2	7	1			9
10	5	20	1	7	2	11	4½			2
		12	8	6	10	7	11½			9
		20	0	7	2	7	1			9
8	2	20	0½	7	6	9	1	7	3	6 or 7
9	4	23	3	7	3	10	3	8	3	8
9	7	20	1	7	4	10	6	7	0	8
10	7	21	6½	7	2	11	5			2
		13	3	7	1	8	2			9
		21	6	7	2	6	5			9
9	11	21	6	7	2	10	9			2
		13	1	6	2	7	5			9
		21	6	7	2	6	5			9
9	*	*0	3	7	*	10	0	9	0	3
9	2							7	0	
10	2	21	10	7	2½	11	0			

(i) *Weights and dimensions of*

Make	Type	Type of Body	Unladen weights	
			Cwts	Qrs
1	2	3	4	5
Albion	A—10	3 ton X ray body (body only)	44	0
"	"	3 ton X ray body (chassis only)	57	3
"	R—20	30 cwt supply body	44	1
"	"	30 cwt field lighting body	56	0
"	I O 41	30 cwt supply body	45	1
Austin	7 h. p	Car light .	10	2
Carden Loyd		2 ton tractor	54	3
"	I A	Light Tank	67	0
"	II B	Ditto	83	0
Chevrolet	M	30 cwt supply body	35	1
Crossley	I G A	Armoured car	109	1
"	I G W	W/T house type body .	64	2
"	I G T	W/T 30 cwt supply body .	61	1
"	5/9	Ambulance body . .	44	0
Douglas	L/29/3	Motor cycle solo . . .	2	2
"	L/29/4	Ditto . . .	2	2
Foden		5 ton steam wagon (complete vehicle)	192	3
"		5 ton steam wagon (disinfecting cyls only)	..	..
"		5 ton steam wagon (chassis only)	..	..
Ford	'AA'	30 cwt. supply body . .	36	1
"	"	30 cwt. petrol tank lorry .	40	2
"	'A'	12 cwt. van body . .	21	3
"	"	Car, light	21	1

mechanical transport vehicles—contd.

Height of vehicles with wheels removed and on blocks		Over all dimensions						Height cut down		Loading index
		Length.		Width		Height Standing				
6		7		8		9		10		11
ft	ins	ft	ins	ft	ins	ft	ins	ft	ins	
		13	4	7	0½	7	2¾			9
		21	6	7	2½	8	0½			9
8	0	17	0	6	6	8	10	6	0	9
7	10	17	0½	6	3½	8	10	6	0	9
7	10	16	10½	6	1½	8	8	5	11	9
		9	3	4	4	4	10½	3	8	9
		12	5	6	3¾	3	10½			9
4	8½	12	1	6	4	7	2	4	5	9
		11	7	6	2½	6	11	4	1	9
7	10	17	2½	5	10½	8	6½	5	9	9
7	9	16	6½	6	2	8	7	6	0	9
7	11	16	8	6	8½	8	9	8	7½	9
8	1½	17	7	6	5½	8	10	5	8	1 or 6
7	11	17	4½	6	3	8	9½			9
		7	2½	2	7½	3	2			9
		7	2½	2	7½	3	2			9
		21	8	7	9	10	5½			5
		10	2	7	9	6	3			9
		21	7	7	9	8	3			9
8	4	16	8½	5	11	9	0	5	6	1 6
6	2	15	4	5	9½	6	9½	6	8½	
6	3	13	0	5	7½	7	0	4	9	
		14	0	5	10½	5	10			

(i) *Weights and dimensions of*

Make	Type	Type of Body	Unladen weights	
			Cwts	Qrs
1	2	3	4	5
Albion	A—10	3 ton X ray body (body only)	44	0
"	"	3 ton X ray body (chassis only)	57	3
"	R—20	30 cwt supply body	44	1
"	"	*30 cwt field lighting body*	*56*	*0*
"	I O 41	30 cwt supply body	45	1
Austin	7 h. p	Car light	10	2
Carden Loyd		2 ton tractor	54	3
"	Y A	Light Tank	67	0
"	H B	Ditto	83	0
Chevrolet	M	30 cwt supply body	35	1
Crossley	I G A	Armoured car	109	1
"	I G W	W/T house type body	64	2
"	I G T	W/T 30 cwt supply body	61	1
"	*5/9*	*Ambulance body* . .	*44*	*0*
Douglas	L/29/3	Motor cycle solo . . .	2	2
"	L/29/4	Ditto . . .	2	2
Foden		5 ton steam wagon (complete vehicle)	192	3
"		5 ton steam wagon (disinfecting cyls only)		..
"		5 ton steam wagon (chassis only)	..	..
Ford	'AA'	30 cwt supply body . .	36	1
"	"	30 cwt. petrol tank lorry .	40	2
"	'A'	12 cwt. van body . .	21	3
"	"	Car, light	21	1

mechanical transport vehicles—contd.

Height of vehicles with wheels removed and on blocks		Over all dimensions						Height set down.		Loading index
		Length.		Width.		Height Standing				
6		7		8		9		10		11
ft	ins	ft.	ins	ft.	ins	ft.	ins	ft.	ins	
		13	4	7	0½	7	2½	.		9
		21	6	7	2½	8	0½			9
8	0	17	0	6	6	8	10	6	0	9
7	10	17	0½	6	3½	8	10	6	0	9
7	10	16	10½	6	1½	8	8	5	11	9
		9	3	4	4	4	10½	3	8	9
		12	5	6	3½	3	10½	..		9
4	8½	12	1	6	4	7	2	4	5	9
		11	7	6	2½	6	11	4	1	9
7	10	17	2½	5	10½	8	6½	5	9	9
7	9	16	6½	6	2	8	7	6	0	9
7	11	16	8	6	8½	8	9	8	7½	9
8	1½	17	7	6	5½	8	10	5	8	1 or 6
7	11	17	4½	6	3	8	9½	..		9
		7	2½	2	7½	3	2	..		9
		7	2½	2	7½	3	2	..		9
		21	8	7	9	10	5½	..		5
.		10	2	7	9	6	3	..		9
..		21	7	7	9	8	3	..		9
8	4	16	8½	5	11	9	0	6	6	1 or 6
6	2	15	4	5	9½	6	9½	6	8½	9
6	3	13	0	5	7½	7	[illegible]	[illegible]	9	9
.		14	0	5	10½	5	1	[illegible]	½	9

(i) *Weights and dimensions of*

Make	Type	Type of Body	Unladen weights	
			Cwts	Qrs.
1	2	3	4	5
Guy	F B A X	3 ton supply body	106	0
"	"	3 ton workshop body (complete vehicle)	170	0
"	"	3 ton workshop body (body only)	87	3
"	"	3 ton workshop body (chassis only)	82	1
"	"	3 ton store body (complete vehicle)	144	0
"	"	3 ton store body (body only)	63	3
"	"	3 ton store body (chassis only)	80	1
"	C A X	3 ton supply body	120	0
"	"	3 ton armoured car	175	1
Holt	"	5 ton tractor	100	0
Humber	Snipe	Car, heavy	32	1
Karrier	W O 6/A	3 ton supply body	94	0
"	"	3 ton workshop body (complete vehicle)	156	0
"	"	3 ton workshop body (body only)	86	0
"	"	3 ton workshop body (chassis only)	70	0
"	"	3 ton store body (complete vehicle)	130	0
"	"	3 ton store body (body only)	62	0
"	"	3 ton store body (chassis only)	68	0
"	W. O 6/B	3 ton supply body	98	0
"	"	3 ton workshop body (complete vehicle)	162	0

mechanical transport vehicles—contd

Height of vehicles with wheels removed and on blocks		Over all dimensions						Height cut down		Loading index.
		Length		Width		Height Standing				
6		7		8		9		10		11
ft	ins	ft	ins	ft	ins	ft	ins	ft	ins	
9	2	20	4	7	6	10	1½	8	5½	8
10	4	20	11	7	7½	11	4			
		13	0	7	7½	8	5½			9
		20	5	7	6	6	10			9
10	0	20	6	7	6½	11	1	..		2
		12	8	6	10	8	2½	.		9
		20	5	7	6	6	10	..		9
9	6	20	11	7	9	10	3	8	6½	8
8	9	21	3	7	9½	9	6½	8	9	4
		11	10	5	4	5	7	..		9
		14	7½	5	7½	5	8½	4	6	9
9	4	20	5½	7	5	10	0	8	4	8
10	8	20	5	7	4½	11	4	..		2
		12	6	6	6½	7	6½	.		9
		10	7½	6	10	6	7½	.		9
10	10	20	3	7	4½	11	6	.		
.		12	8	6	10	8	1	..		
..		19	7½	6	10	6	7½	..		
9	8½	21	8	7	8	10	4½	8	8½	8
		21	10	7	3	11	4	..		

(i) *Weights and dimensions of*

Make.	Type	Type of Body	Unladen weights	
			Cwts	Qrs
1	2	3	4	5
Karrier	W. O. 6/B	3 ton workshop body (body only)	88	1
"	"	3 ton workshop body (chassis only)	73	3
"	"	3 ton store body (complete vehicle)	136	0
"	"	3 ton store body (body only)	64	1
"	"	3 ton store body (chassis only)	71	3
"	C Y	30 cwt supply body	50	1
"	"	30 cwt field lighting body	..	..
Morris	S W	30 cwt supply body (old type chassis)	53	1
"	"	30 cwt supply body	52	0
"	"	30 cwt ambulance body (complete vehicle)	56	1
"	"	30 cwt ambulance body (body only)	18	2
"	"	30 cwt ambulance body (chassis only)	37	3
"	"	30 cwt ambulance body (with sliding stretcher rests) (complete vehicle)	54	0
"	"	30 cwt ambulance body (body only)	16	1
"	"	30 cwt ambulance body (chassis only).	37	3
"	"	30 cwt W/T house type body (complete vehicle)	63	0
"	"	30 cwt W/T house type body (body only)	25	1
"	"	30 cwt W/T house type body (chassis only)	37	3

mechanical transport vehicles—contd

Height of vehicles with wheels removed and on blocks		Over all dimensions						Height cut down		Loading index
		Length		Width		Height Standing				
6		7		8		9		10		11
ft	ins	ft	ins	ft	ins	ft	ins	ft	ins	
		12	6	6	6½	7	6½			9
		10	9½	6	9½	6	7			9
10	10	11	8	7	3	11	6			9
		12	8	6	10	8	1			9
		20	9½	6	9½	6	7			9
8	6	17	3	6	4	9	3			1 or 6
8	11	17	5½	6	1	9	7	8	0	1
8	1	17	3	6	3	8	10½	5	8	1 or 6
8	1	16	5	6	3	8	10½	5	8	1 or 6
8	2	16	0	6	4	8	11½			2 or 6
		12	6	6	4	6	4			9
		15	5	5	11	7	0			9
8	4½	17	9	6	9	9	2			2 or 6
		13	4	6	9	6	7			9
		15	9½	6	8	6	1			9
8	7	17	7	6	2	9	6			2 or 6
		9	6	5	11	6	11			
		16	4½	5	11	5	8			

(i) Weights and dimensions of

Make	Type	Type of Body	Unladen weights	
			Cwts	Qrs
1	2	3	4	5
Morris	S W	30 cwt W/T non house type body	79	2
"	"	30 cwt derrick lorry	63	0
"	"	30 cwt water tank lorry	63	0
"	"	Tractor	54	1
"	"	Car, heavy 6 wheeler	53	0
"	Oxford 15/9	Car, light	27	3
"	R E	30 cwt supply body	37	0
Rolls Royce		Armoured car	65	0
Sunbeam	25 h p	Car heavy	35	0
Thornycroft	A 4	3 ton supply body	95	0
"	A 5	Ditto	95	0
"	"	3 ton workshop body (complete vehicle)	159	0
"	"	3 ton workshop body (body only)	83	2
"	"	3 ton workshop body (chassis only)	75	2
"	"	3 ton store body (complete vehicle)	133	0
"	"	3 ton store body (body only)	59	2
"	"	3 ton store body (chassis only)	73	2
"	"	3 ton workshop body (supply type)	.	..
"	"	3 ton store body (supply type)		..
"	"	3 ton breakdown lorry .	108	0
"	"	3 ton petrol tank lorry .	144	1

mechanical transport vehicles—contd

Height of vehicles with wheels removed and on blocks		Over all dimensions						Height cut down		Loading index.
		Length		Width		Height Standing				
6		7		8		9		10		11
ft.	ins	ft.	ins	ft	ins	ft	ins	ft.	ins	
8	3½	16	4	6	2	9	0	8	3½	6
7	5½	19	6	6	2½	8	3	5	8	9
7	0	16	4	5	11	7	9½	7	1	9
8	1	17	3	6	3	8	10½	5	8	
		16	3	6	4	7	0	5	4	9
		13	8	5	9	6	1	4	8½	9
8	1	16	11	5	11	9	0	5	4	1 or 6
		16	8	6	3	7	8			9
		16	2	6	4	6	3½	4	10½	9
9	4	21	4	7	2	10	3	8	7	8
9	1	21	6	7	2	10	0	8	4	8
10	5	21	4	7	7	11	4			2
		13	8	6	11	8	2			9
		21	2	6	11	7	1			9
10	4	21	3	6	11	11	3			2
		13	8	6	11	7	10½			9
		21	2	6	11	7	1			9
10	1	21	5	6	11	10	11½			8
10	1	21	5	6	11	10	11½			8
9	2	21	4	7	0	10	0	8	4	
8	10	20	6	7	0	9	0			8

(i) *Weights and dimensions of*

Make	Type	Type of Body	Unladen weights	
			Cwts	Qrs
1	2	3	4	5
Triumph	S D	Motor cycle solo	2	2
"	,	Motor cycle, combination	3	1
"	N S D	Motor cycle solo	2	2
"	,	Motor cycle, combination	4	0
Wolseley	16/45 h p	Car, heavy	35	0
Trailer W/T (W O)	180 gallon	Water tank trailer	22	0

Loading index

1 Shows vehicle travels by rail with superstructure removed
2 Shows vehicle travels by rail with body and hood removed.
3 Shows vehicle travels by rail with cap and petrol tank removed
4 Shows vehicle travels by rail with cupola removed

mechanical transport vehicles—concld

Height of vehicles with wheels removed and on blocks		Over all dimensions						Height cut down		Loading index *
		Length		Width		Height Standing				
6		7		8		9		10		11
ft.	ins	ft	ins	ft	ins	ft	ins	ft	ins	
		7	1½	2	9	3	8			9
		7	1½	4	11	3	9½			9
		7	1½	2	9	3	8			9
		7	1½	4	11	3	9½			9
		14	9	5	8	6	1	4	9	9
		11	0	6	10	5	6			9

(II)[1] *Weights and dimensions of horse-drawn vehicles used in the Field*

—	Weights				Dimensions						Remarks
	With vehicle equipment		With equipment and maximum load		Length without pole or shafts		Width		Height		
1	2		3		4		5		6		7
	Cwt	qrs	Cwt	qrs	Ft	ins	Ft	ins	Ft	ins	
Carriage ambulance stretcher	1	1					4	3½			
Carts—											
Ambulance, horse . .	15	3			8	8	6	10	8	0	
Tool, R E, Mk II . .	11	0	23	1	6	9	6	4	4	11	
Transport	6	1	13	1	6	6	5	3	4	6	
Water, tank, Mk. VII . .	15	1	25	1	8	8	6	4	4	11	
Wagons—											
Ambulance, light . .	16	2	29	2	12	3	6	4	7	1 (a)	(a) Cover and hoops removed.
B C's with limber Q F. 13 and 18-pr.	38	2	..		12	11	6	3	5	2	
B C's, with limber Q F. 4·5" .	40	0	..		15	5	6	4	5	0	

Cable—										
Body	10	0	32	0	11		6	4	4	8
Limber	9	1			5	3	6	4	5	6
Limbered G S —										
Fore	7	1	[illegible]	1	5	2	6	4	4	8
Hind	6	2	1	2	5	2	6	4	4	8
Pontoon	[illegible]4	0	61	3	16	6½	6	8	5	1
			(Li ht bridge load)							
Telephone—										
Body	7	2	17	0	9	10	6	4	4	8
Limber	7	3			5	3	6	4	5	6
L mber wire es	19	0			5	5	6	3	5	2

NOTES ON THE MAINTENANCE OF MECHANICAL TRANSPORT VEHICLES

[illegible]

weekly and replenished as required

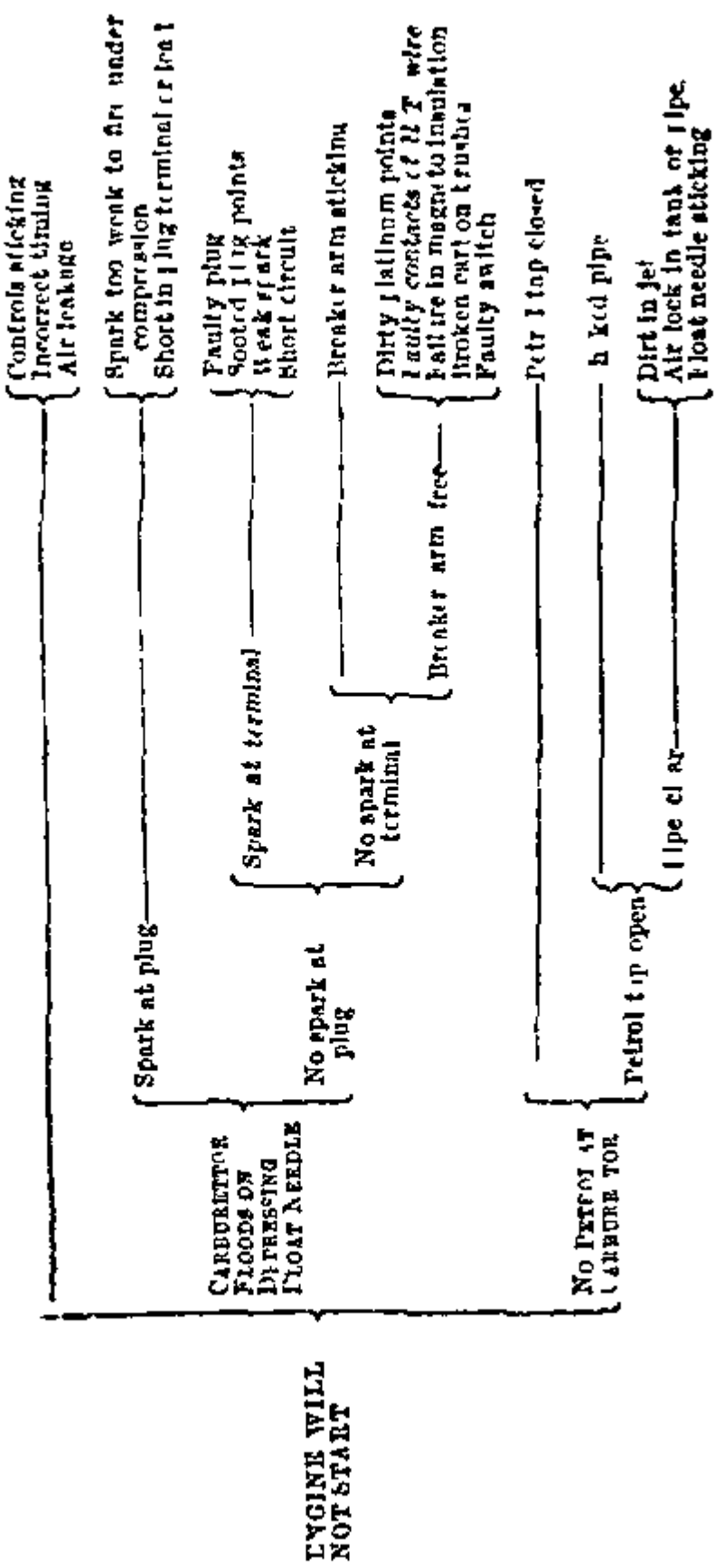
The remainder of the vehicle must be lubricated as necessary, all parts examined for defects loose bolts, etc , and minor adjustments must be made on the spot

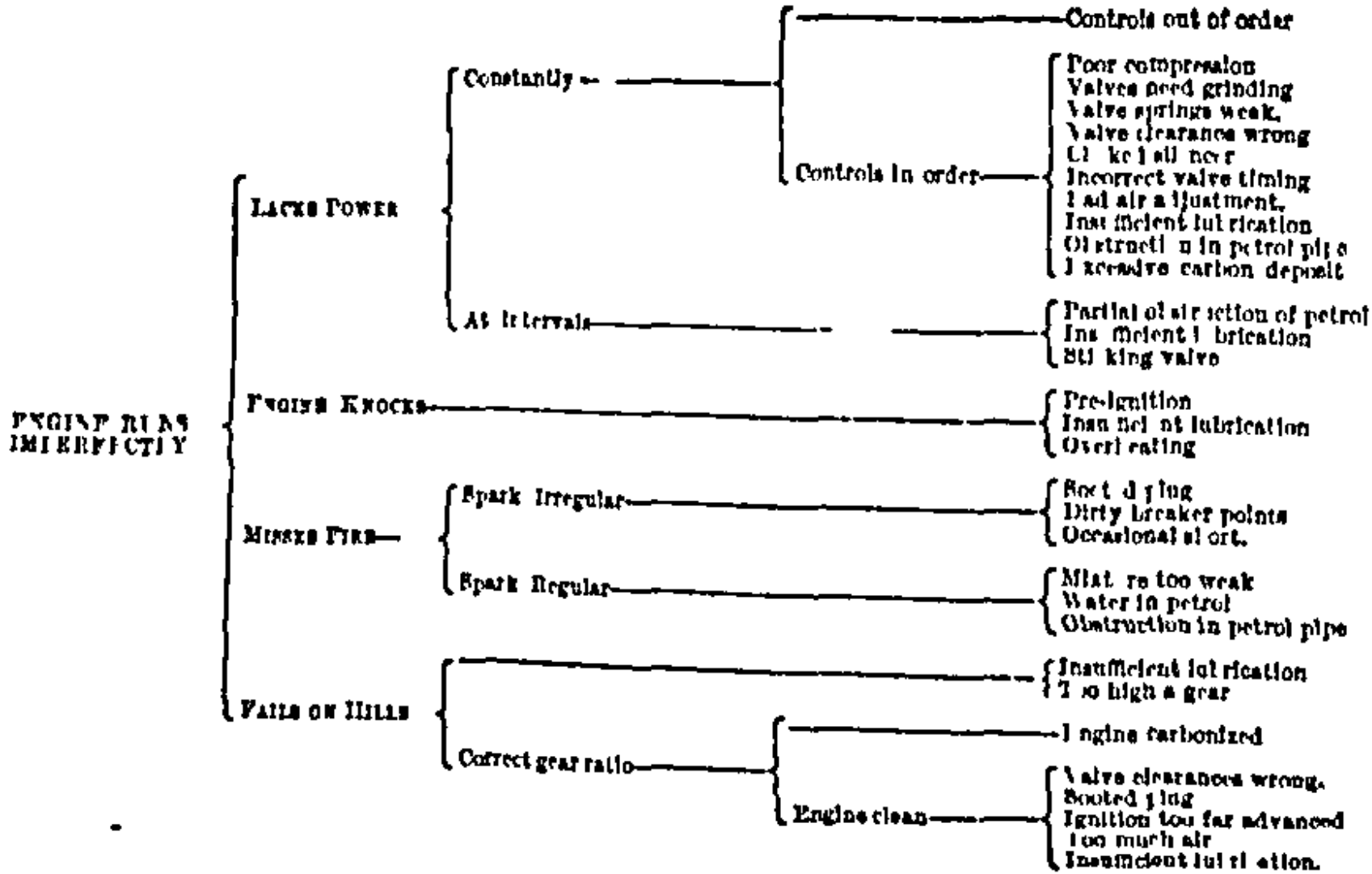
Vehicles must be kept as clean as possible and all dust and dirt removed from moving parts

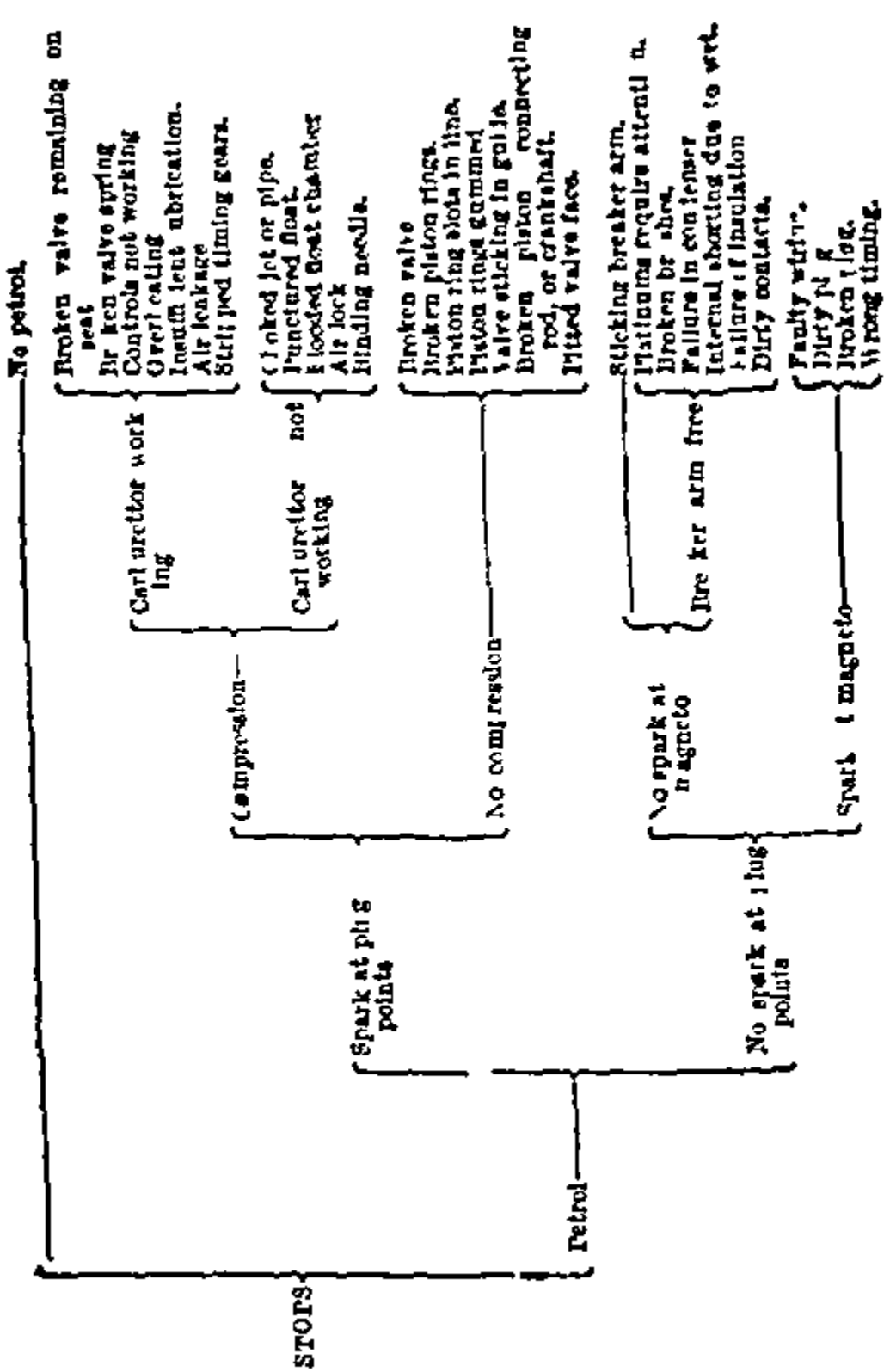
4 Full details for maintenance are contained in the "Instructions [illegible]

LOCATION OF FAULTS

6 The following fault locating chart should enable engine faults to be quickly diagnosed and remedied —


ENGINE WILL NOT START
Controls sticking
Incorrect timing
Air leakage
Spark too weak to fire under compression
Short in plug terminal or lead
Spark at plug
Faulty plug
Fouled plug points
Weak spark
Short circuit
Spark at terminal
Breaker arm sticking
No spark at terminal
Dirty platinum points
Faulty contacts of H.T. wire
Fault in magneto insulation
Broken cam or rubber
Faulty switch
Breaker arm free
No spark at plug
CARBURETTOR FLOODS OR DISTRESSING FLOAT NEEDLE
Petrol tap closed
Blocked pipe
Dirt in jet
Air lock in tank or pipe
Float needle sticking
Petrol tap open
Pipe clear
NO PETROL AT CARBURETTOR


ENGINE RUNS IMPERFECTLY
LACKS POWER
Constantly
Controls out of order
Controls in order
Poor compression
Valves need grinding
Valve springs weak.
Valve clearance wrong
Choked silencer
Incorrect valve timing
Bad air adjustment.
Insufficient lubrication
Obstruction in petrol pipe
Excessive carbon deposit
At intervals
Partial obstruction of petrol
Insufficient lubrication
Sticking valve
ENGINE KNOCKS
Pre-ignition
Insufficient lubrication
Overheating
MISSES FIRE
Spark Irregular
Fouled plug
Dirty breaker points
Occasional short.
Spark Regular
Mixture too weak
Water in petrol
Obstruction in petrol pipe
FAILS ON HILLS
Insufficient lubrication
Too high a gear
Correct gear ratio
Engine carbonized
Engine clean
Valve clearances wrong.
Fouled plug
Ignition too far advanced
Too much air
Insufficient lubrication.


STOPS
No petrol.
Broken valve remaining on seat
Broken valve spring
Controls not working
Overheating
Inadequate lubrication.
Air leakage
Stripped timing gears.
Carburettor working
Carburettor not working
Choked jet or pipe.
Punctured float.
Flooded float chamber
Air lock
Binding needle.
Compression—
Broken valve
Broken piston rings.
Piston ring slots in line.
Piston rings gummed
Valve sticking in guide.
Broken piston connecting rod, or crankshaft.
Fitted valve face.
No compression
Petrol
Spark at plug points
Sticking breaker arm.
Platinums require attention.
Broken breaker arm.
Failure in condenser
Internal shorting due to wet.
Failure of insulation
Dirty contacts.
Breaker arm free
No spark at magneto
Faulty wiring.
Dirty N. K.
Broken plug.
Wrong timing.
Spark at magneto
No spark at plug points

7 *Repairs and Maintenance* —

These are classified as under —

(a) *First Line repairs* —1st line repairs are temporary repairs made

CHAPTER X.

43. SUPPLY AND REPLENISHMENT OF MATERIAL.

System of Supply in Front of Railhead.

1 The forward supply of material in advance of railhead is normally effected by means of road transport

2 Road transport is of three categories —

(i) Field transport for carriage to and with units or formations of their requirements of stores and materials either as first issues or as replenishments
(ii) Technical transport *i e*, specially equipped vehicles
(iii) Reserve transport for allotment as additional field transport in front of railhead or as transport on the L of C

3 Field transport consists of three links of a chain —

(i) third line transport
(ii) second line transport
(iii) first line transport

4 Each link delivers to the link in front of it at selected points termed "refilling points or delivery points" Third line transport which will normally be loaded at field depôts or railhead delivers to second line transport at refilling points second line to first line at delivery points

5 Refilling points are selected by the Divisional H Q but cases may arise [illegible]

6 When the shortness of journeys makes it possible to economize road transport by omitting one link in the chain commanders are responsible that this is done Any one link may be utilized to carry out the duties normally allotted to two links or even to three links [illegible]

8 The normal system of forward supply from railhead in India therefore entails the employment of two categories of road transport —

(i) L of C Transport from Railhead to Roadhead.
(ii) Field Transport from Roadhead to units

L of C Transport normally delivers to depots at Roadhead
When units to be supplied are not required by the nature of their tasks to [illegible]

10 When a force is halted for a few days preparatory to a further advance roadhead will often be in the bivouac area of the force in which case the second line can be eliminated and roadhead becomes delivery point.

First Line Transport

11 First line transport is an integral part of the war organization of all units and is shown in their war establishments

The control of first line transport is the duty of unit commanders subject to such instructions in regard to temporary grouping or movement for tactical purposes

In normal circumstances it is advisable to divide the first line transport into two portions (referred to as A and B echelons) one of which accompanies the unit closely whilst the other moves brigaded in rear of the formation The composition of these echelons will vary according to local circumstances

The responsibility for the care and efficiency of all personnel animals, vehicles and equipment of first line transport while with the unit rests with unit commanders

The O C Divisional I A S C is the senior transport officer of and the representative of the D S T in the division He will render such assistance in the technical supervision of all first line transport in the division, for which the D S T is responsible as the divisional commander may direct

The D D S T Army will exercise similar functions in regard to army troops

12 First line animal transport consists of —

(i) Unit transport included in the peace establishment of the unit.

(ii) Attached transport provided by Animal Transport Companies (Mule) of the I A S C

A T Coys (Mule) are organized in companies of three or four troops these companies meet the requirements in 1st line attached transport of an infantry brigade or divisional troops respectively The O C A T Coy is the [illegible]

Second Line Transport

13 Second line transport normally consists of M T Coys I A S C but may consist of A. T Coys if communications are unsuitable for M T

These are allotted to units on an "as required" basis They are not organized specially for the carriage of baggage and supplies

For carriage of ammunition see Sec 44

The general control of second line transport is the duty of divisional and Army commanders respectively and is exercised directly by orders issued by them through the O C Divisional I A S. C. or D D S & T Army as the case may be to commanders of transport units or groups of such units

TECHNICAL AND RESERVE TRANSPORT

Technical Transport units are as follows :—

Name of Unit.	Duties	Allotment and remarks
Mobile Repair Unit (I A S C)	Repair of M T Vehicles of fighting units	Allotted to each Force as required
Motor Ambulance Convoy	Carriage of sick and wounded from field ambulances to casualty clearing stations and thence to ambulance trains	Medical units with I A S C transport wing attached allotted to each Force as required

The operation and maintenance of the above units are the responsibility of the I A S C

44 SUPPLY OF AMMUNITION AND EXPLOSIVES

(See F S R Vol I)

GENERAL PRINCIPLES

[illegible]

begin

Each echelon must be constantly aware of the position of and be in com

The accounts of rounds fired will be kept under the orders of commande: of units

7 The supply from ammunition echelons is not necessarily restricted t troops of their own formation or to particular units In an emergency an unit is to receive ammunition on demand from any echelon at hand whic carries ammunition of the type required.

PROVISION OF AMMUNITION

[illegible]

9 When an action is anticipate i it is advisable that one or two days norm [illegible]

DISTRIBUTION OF AMMUNITION RESERVES.

10 The work of replenishing ammunition normally is divided between —

(i) Units (with Divisions and Cavalry Brigades)
(ii) Army transport which will deliver to Divisions etc
(iii) Units working on the I of C which are responsible for the delivery of ammunition at ammun tion railheads and roadheads

[illegible]

Rendezvous if required are fixed by Army Headquarters (or Corps Headquarters, if it is existe)

A R P's are normally fixed by Divisional Headquarters in consultation [illegible]

DELIVERY POINTS 1st Line Transport

AMMUNITION POINT

onal Ammunition Unit
Line Transport)

Formations.

AMMUNITION REFILLI
POINT

RENDEZVOUS

ine Transport (a)

ROADHEAD
[Ammunition delivered
I A O C Det. (R Amn
Depot)]

INTERMEDIATE AMMU
DEPOTS on L of C (if req

C Transport (b)

Army

RAILHEAD (R Amu. Dep

Indian and Ammun t on R fill

The delivery point f r infantry units is normally the Infantr Brigade Ammunition Reserve This is not a permanent organization but its formation by withdrawing S A A vehicles from units as necessary will be a normal procedure

16 No regular 2nd line ammunition echelons are provided for Army Field [illegible]

SELECTION OF SITES FOR A R Ps

19 The following considerations should be borne in mind in selecting the A R P —

(a) Protection of A R P In uncivilized warfare the protection of A R P will require consideration Under certain circumstances it may be advisable to locate A R P, adjacent to or inside a post on the L of C

20 When preparations for an attack on a large scale are being made and

45-A. AMMUNITION PACKAGES AND LOADS

22 Details of packages of artillery ammunition S A A grenades and fireworks —

(i) *Artillery ammunition*

Nature and quantity of ammunition	Name of package.	Sizes of package			Weights
		Length	Width	Depth.	
1	2	3	4	5	6
		Ins	Ins	Ins	Lbs
Q F 3 pr *Gun* —16 rounds practice or sub calibre.	Box amn Q F 3 pr 1 P	23	14	13	138
Q F 6-pr *Gun* —11 rounds practice or sub-calibre.	Box amn Q F 6 pr I I	22	17	11	140
Q F 13 pr *Gun* —4 rounds H E or shrapnel	Box amn C 53	28	11	10	82
Q F 15 pr *Gun* —4 rounds H E shrapnel	Box amn C 51	28	10	10	112
Q F 3 in 20-cwt. *Gun* —4 rounds H E. shrapnel or practice	Box amn C 189	32	10	10	131
Q F 3 7-in *How* —					
2 shell, H E, shrapnel . .	Box projectile P 54 .	17	11	7	53
2 shell, H E.	Box, projectile, P 16 .	17	11	7	51
10 cartridges	Box cartridge, C 27 . . .	26	12	7	48
2 complete, rounds, H E, or shrapnel .	Box, amn, C. 184 . . .	19	17	8	51

2 P. 4 5-in. How — 2 shell, H E or smoke	Box, projectile, P 10	20	13	7	82
2 shell, H E or smoke	Box, projectile, P 53	20	13	7	85
10 cartridges	Box cartridge, C 19	23	14	8	58
2 complete rounds, H E	Box, amn , C 174	26	12	8	100
B L 2 75-in. Gun.—4 complete rounds H E.	Box., Amn., B L 2 75" H E , I P	26	16	6	83
B L 2 75-in Gun.—4 complete rounds shrapnel.	Box, Amn , B L 2 75" shrapnel I P.	23	16	6	82
B L 60-pr Gun — 1 shell, H. E or shrapnel	(Fitted with grummet)	20	6		60 or 56
10 cartridges, 9-lb 7-oz	Case, powder, M L , whole, C 118	18	17	22	145
10 cartridges, 8-lb 10-oz 4 drs	Case, powder, M L , whole, C 118	18	17	22	137
10 cartridges, 6-lb 6-oz	Case, powder, M. L , whole, C 118	18	17	22	115
B. L 6-in Gun — 1 shell, H E or shrapnel	(Fitted with grummet)	23	7½		100
2 half charges of 11½ lb	Cylinder cartridge, No 34, with skeleton case	30	9	9	43
B L 6-in How — 1 shell, H E	(Fitted with grummet)	22	7½	.	100
1 shell, H E., streamline	(Fitted with grummet)	22	7½	..	86
20 cartridges, 4 lb. 11½-oz 0 cartridges, 4 lb 10½ oz.	Case, powder, M L., whole, C. 118	18	17	22	153

(1) *Artillery ammunition*—contd

Nature and quantity of ammunition	Name of package	Sizes of package			Weights
		Length	Width	Depth	
1	2	3	4	5	6
		Ins	Ins	Ins	Lbs
Fuzes—					
25 No 80	Box fuze F 80	19	18	9	64
25 No 83	Box fuze F 80	19	18	6	59
20 No 101 and gaine	Case packing fuze F 100	18	13	11	75
20 No 106 or 106E	Case packing fuze F 100	18	13	11	70
Tubes percussion S t cartridge—200	Case packing tubes T 3	15	7	4	12

(ii) *Small Arm Ammunition*

Nature and quantity of ammunition and name of package	Sizes of package			Weights
	Length	Width	Depth	
1	2	3	4	5
	Ins	Ins	Ins	Lbs
303-inch—				
1 000 rounds Mk. VII in Box A S A H 17— In bandoliers	21	9	9	80
1 000 rounds Mk. VII in Box A S A H 18— In bundles	21	9	7	71
400 rounds tracer S P G Mk. VIIG in box, amn S A. tracer	14	9	6	30
**455 inch Revolver—*				
300 in box amn. S A pistol I P	9	7	5	18

(iii) *Grenades and fireworks*

Nature and quantity	Description of package	Overall size of package			Weight of package filled
		Length	Width	Depth	
1	2	3	4	5	6
		Ins	Ins	Ins	Lbs
Cartridges, signal or illuminating, 1 in 150.	Box, Amn S A II 17	21	9	9	36
Cartridges, signal or illuminating, 1½ in. 70.					
Grenade, 303 in rifle, No 36	Box, Amn S A II 17	21	9	9	35
24 grenades					
24 detonators in tinned plate cylinders					
288 A cartridges in tinned plate box					
24 gas checks and key					50

23 Maximum Loads of ·rious forms of transport in roun ls of artillery ammunition an 1 S A A

Nature of transport 1	3 in 20-cwt 2	13 pr 3	18 pr 4	4 5 How 5	2 75" Gun 6	3 7 How	6" How 8	60 pr 9	S A A 10	Grenad s 11	Very Lights 12
.mmunition mule					14	8					
w th battery ransport mule					8	4			2 000	48	600
amel		16	16	8	20	12			5 000	144	1 500
un carriage limber		24	24	12							
.mmunition wagon with limber		76	76	48							
S wagon		144	108	64	180	100	25	40	30 000	800	12 000
G S wagon		100	76	48	125	72			22 000		7 200
T Cart		36	28	16	40	24	6	10	10 000	312	3 300
orry 3 ton	208	280	224	120	360	200	52	90	80 000	2 592	26 250
orry, 30-cwt	104	140	112	60	180	100	26	45	40 000	1 344	18 000
ailway Truck 10 tons	800	1 000	800	450	1 250	720	200	250	250 000	8 136	
ractor lorry—Battery			24	12							
of rounds in ransport box	4	4	4	2	4	2			1 000	12	150
of filled box	131	90	118	97	(a) 76 (b) 80	75			80	29	36

(a) Shrapnel. (b) H E.

Supply of Explosives

*4 Explosives to replace wastage will be supplied in the same manner as S A A

25. Explosives (demolition) to be carried by units in the field are shown in the following table —

Items		With the unit			In Cavalry Brigade Ammunition unit.	In Divisional Ammunition unit.	Total in Cavalry Brigade.	Total in Division	At Railhead			
		Field Troop S M.	Field company S M.	Army Troops company S M					Per Field Troop.	Per Field company	Per Army Troops Company	One month's supply for Engineer Services
1		2	3	4	5	6	7	8	9	10	11	12
Detonators, No 8	No	200	3 0	400	60	260	2.0	1 310	150	260	400	8 400
Detonators Electric No 13		100	150	200	25	110	1"5	560	75	110	200	2 800
Dynamite or Gelignite	lbs			80							80	5 600
Fuze Instantaneous Detonating	feet	400	"00	300	100	525	500	2 625	300	525	300	
Fuze Safety No 11	fathoms	224	218	100	56	160	280	808	168	160	100	4 750
Guncotton Dry Primers field 1 oz	No	360	3 0	100	90	280	450	1 390	2 0	280	100	
Guncotton Wet slabs field 1 lb		3.2	260		68	195	440	975	264	195		
Gun powder	lbs											1 200
Matches Fuze Safety	No	7"0			180		900		540			
Unions Fuze and detonator	No	120	"00	200	30	150	150	"50	90	150	200	

NOTE —Two complete refills for each unit *plus* 2 months supply for Engineer Services are held at Base or Advanced Base Ammunition Depots.

26 Details of packages of explosives are given in the following table —

Store 1	Nature and contents of package 2	Size of package Length 3	Width 4	Depth 5	Weight of package 6
		In	In	In	Lb
Guncotton, dry, primers	Box guncotton dry, primers, filled 1oz W 3 Mk III Guncotton dry, primer field 1 oz Mk I—60 in 6 tinned plate cylinders Mk V	16	6	7	14
Guncotton, wet, slabs	Guncotton, wet, slabs field, 15 oz, Mk I—14	14	8	8	27
Ditto	Crate, guncotton, wet, field, 14 slabs W 56 Mk I Guncotton, wet, slabs, field, 15 oz, Mk I—14	13	8	8	24
Ditto	Guncotton, wet slabs, field, 1 lb —14				
Ditto	Crate, guncotton, wet field, 14 slabs, W 56 Mk. I Guncotton, wet, slabs, field, 1 lb —14	13	8	8	25
Detonators, No 8 Mk VII	Box, detonator, D 1, Mk I or 1a Detonators No 8 VII, with 2 feet of safety fuze attached—24 in 4 tinned plate cylinders, No 40	20	7	7	14
ators, No 8, Mk. VIII	25 in cylinders No 8, D Mk III Packed in box detonator, No 8				3

Store 1	Nature and contents of package 2	Size of package Length. 3	Width 4	Depth. 5	Weight of package 6
		In.	In	In	Lb.
Detonators electric No 13	Case wood packing detonator electric No 13 Detonators electric No 13 in cylinder No 13D with rectifier (25 in a cylinder)	22	10	6	18
Detonator electric No 9	Cases, packing detonator electric D° Mk 1 and 1a Detonators electric, No 9 Mk. IV—100 in 4 tinned-plate cylinders	22	10	6	18
Fuze safety No. 11	Cases powder M L. whole (containing 60 cylinders) Fuze, safety No. 11—8 fathoms in one tinned plate cylinder	17	17	21	129
Fuze, instantaneous detonating	Box F I D Quarter Mk I Fuze instantaneous detonating trotyl Mk I 100 feet, on special reel in Box F I D Quarter Mk. I	14	14	4	46
Matches, fuze safety	Case, wood packing Matches fuze safety—3 500 in 140 boxes.	12	7	7	8

NOTE.—Measurements are given to the nearest inch and weights to the nearest lb

45 B REPLENISHMENT OF SUPPLIES.

[illegible]

5 The period covered by the issue of food and forage rations will be from midnight to midnight

6 The result of the procedure is that, exclusive of the emergency ration, the supply situation at any time is as follows —

(i) Supplies for current day with the unit on man horse or first line vehicle

(ii) Supplies for the second day about to be transferred to second line transport, in second line transport, or about to be transferred to 1st line transport

(iii) Supplies for the third day approaching roadhead (or railhead when railhead and roadhead coincide), at roadhead or in 3rd line transport

PETROL AND LUBRICANTS

7 The daily supply of petrol, oils and grease will follow the normal channel of distribution for supplies, but the method of issue will be such as to facilitate automatic meeting of units' demands

Petrol together with its quota of lubricants will be supplied without indent on an " as required basis " the amounts drawn being entered on I A F B - 1024 and receipt obtained thereon at the time of issue

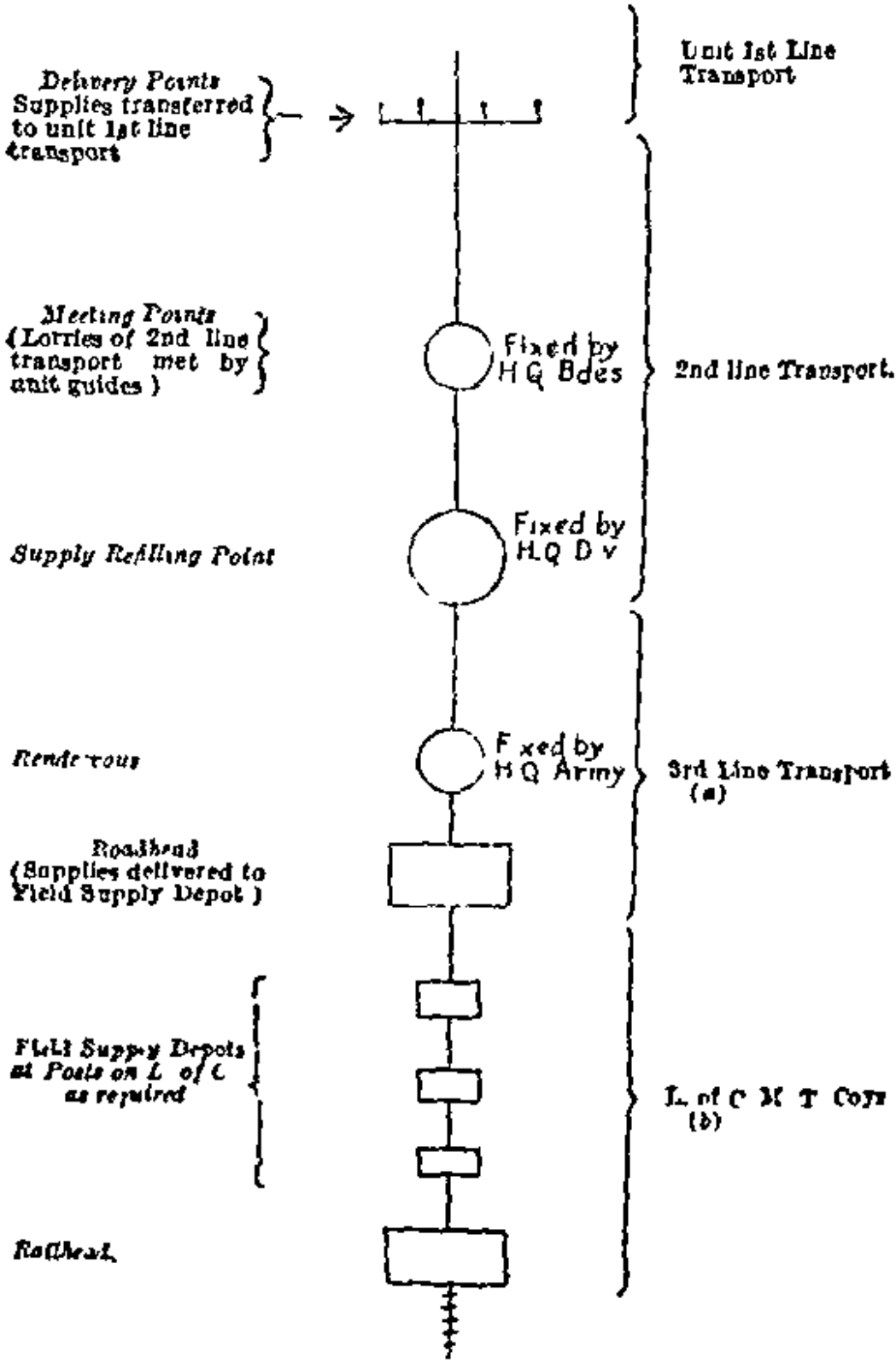
8 The following table gives a method of approximately estimating petrol consumption for a force composed of the various types of vehicles mentioned —

Type of vehicle	*Petrol consumption for 50 miles*
	Gallons
Motor cycle, solo	1
Motor cycle, combination	2½
Motor cars, Class D	
Motor cars, Class C	2½
Motor vans	
Motor cars, Class B	4½
Motor ambulance, 4 wheeled	
Lorries 30-cwt 4 or 6 wheeled	5½
Motor cars 6 wheeled	
Motor ambulance, 6 wheeled	
Armoured cars	
Light tanks	
8 ton lorries 4 or 6 wheeled	
8 ton tractor lorries and tracked tractors	

PLATE XXXII.

SYSTEM OF SUPPLIES

Normal system of forwarding supplies from Railhead to the troops of a Division or Cavalry Brigade



NOTES.—(a) Under Indian Frontier conditions the 3rd line transport link will seldom be necessary as Roadhead and supply Refilling Point will normally coincide.

(b) In circumstances when L. of C. terminates at Railhead the L of C. transport link will be omitted.

9 For [illegible]

Class of Vehicle	Oil			Grease cup No 7
	I C Engine heavy No 11	I C Engine extra heavy No 1	Engine extra heavy No 23 A	
1	2	3	4	5
Motor cycles		8½	1	
Carden Loyd tanks	8½		(a)	½
Other vehicles	8½		1(b)	½

(a) Gear box lubricated with oil I C engine light No 9 (Approximately 1 per cent)
(b) If worm driven rear axle incorporated Oil castor No 1 will be required (approximately ½ per cent) and oil engine extra heavy No 23A will [illegible]

	Lbs
Aviation Mixture	7 63 per gal
Petrol Aviation	7 25 "
Petrol M T	7 50 "
Lubricating Oils	9 00 "
Cans 2 gals	2 50
4 gal Drums	7 25
4 gal E W Drums	10 00
40 gal Steel Drums	107 00
40/45 gal trade non returnable steel barrel	Varies from 50 to 104 lbs

11 The capacity of vehicles in terms of petrol in 2 gallon cans uncased is given in Section 40 2

NOTES ON THE SELECTION OF S R Ps.

[illegible]

15. Efficient traffic control will be established at supply refilling point to [illegible]

(i) Wide open spaces having a hard level surface and solid foundations [illegible] form ideal [illegible]

18. Local resources are exploited by —

Purchase by contract or in the open market with cash payment.—This is the most usual means employed in the East and usually has the effect of conciliating the people of the country.

19. Local supplies will be purchased by representatives of the service concerned, immediate cash payments being made. In the case of large demands purchases will be made by officers of the Local Purchase Sections.

20. The main factors determining resort to local purchase are —

(a) The necessity for releasing transport employed on normal maintenance work for more urgent purposes.

(b) The capacity or otherwise of the transportation system to meet the [illegible]

21. The D. D. S. & T. Army will inform his Local Purchase Officer if and when certain local resources are to be partially, carefully exploited to meet the [illegible]

23. *Confiscation or foraging.*—This is sometimes employed as a punitive measure and is normally combined with a tactical operation.

When foraging across the Indian frontier look for foodstuffs as follows —

Waziristan —Buried beneath the floors of huts

Baluchistan —Hidden in Karezes and nullahs

Tirah —Behind the false walls in houses.

Swat Bajaur & Bajaur —In compartments and partitions built on to inside walls of houses

Burma —In granaries in fields—usually no concealment

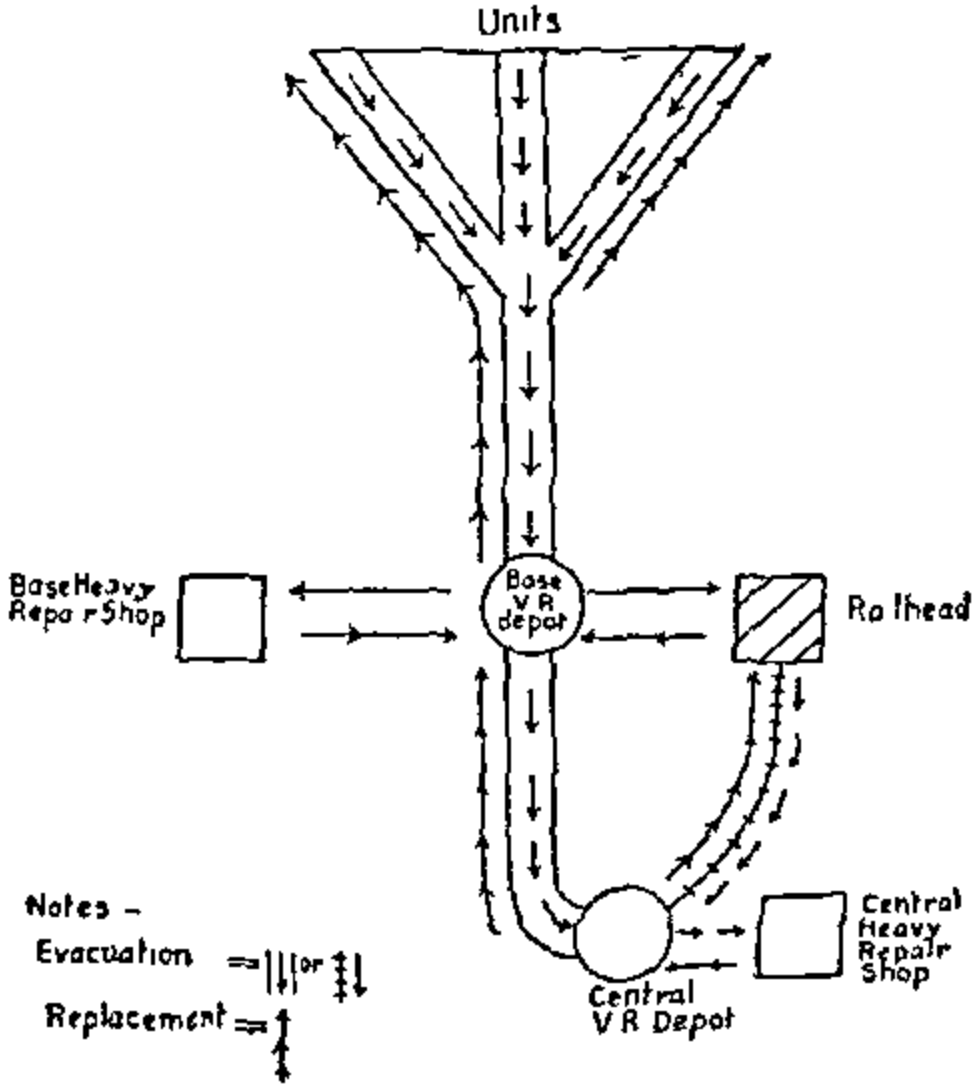
26 *Cultivation* —Local inhabitants may be compelled to grow what is necessary or the army undertake cultivation to increase local resources This system was employed in Iraq during the Great War

46 REPLACEMENT OF VEHICLES

M T Vehicles

The following diagram (Fig 17) illustrates the process of evacuation and replacement

Fig 17



When evacuation is by road the units driver goes with the ve Vehicle Reserve Depot or its advanced detachment and returns replacement vehicle When evacuation is by rail the replacement will be delivered to the unit by the Vehicle Reserve Depot. The tion and replacemen 1st line transport vehicles of units will be under arrangements y C I A. S. C.

48 SUPPLY OF ENGINEER STORES

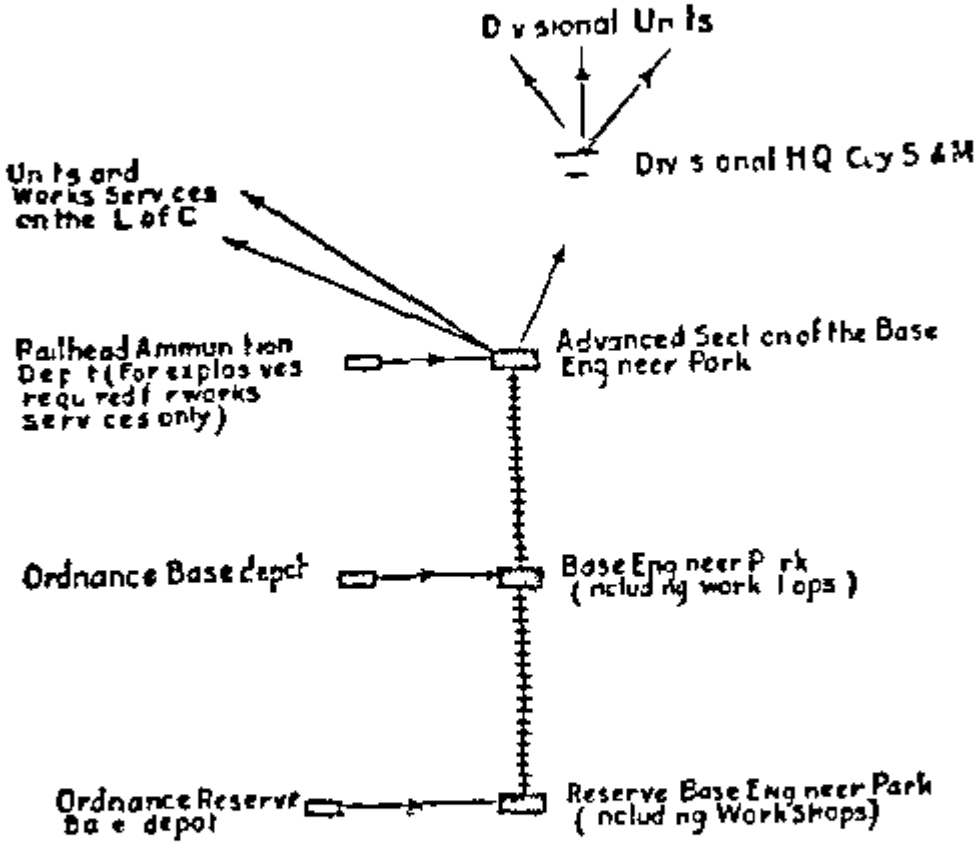
1. Engineer stores comprise material plant and additional tools for engineer work of all kinds whether carried out by Engineers or other arms

2. Engineer Stores are of two kinds —

(a) Stores of Engineer supply
(b) Stores of Ordnance supply

3. The following diagram (fig 19) illustrates the normal system of supply

Fig 19



NOTE —Explosives for works services only are supplied through Engineer channels Explosives for the replenishment of unit scales are received through normal ordnance channels in a similar manner to S A A.

49 LOAD TABLES FOR ORDNANCE AND ENGINEER STORES AND SUPPLIES

I ORDNANCE AND ENGINEERING STORES —

Articles.	One man load		Transport			
	No	35 lbs weight lbs	3 ton lorry (d)	A T Cart at 800 lbs	Camel at 400 lbs	Mule at 160 lbs
1	2	3	4	5	6	7
Axes pick—						
Complete 6½ lbs	8	37½	1 020	120	62	24
With helve and helves separate— Head is at 4½	8	36	1 400	170	88	36
Helves 1½	23	34	4 480	533	266	106
6½ lbs helves	4	32	840	100	50	20
Bags sand common— (In bales of 250) 80 lbs	80	32	62 bales	10 bales	5 bales	2 bales
(In bales of 1 000)	6.5(e)	33	13 000	1 500	750	300
Blankets, Barrack (in bales of 15)	6(e)	30	1 170	135	60	30
Cement bags 112 lbs			60 bags	7 bags	3 bags	
Chalk, sand gravel		½ sand bag	2½ cu yds	½ cu yd	½ cu yd	2 sand bags
Earth	..	½ sand bag	2½ cu yds	½ cu yd.	½ cu yd	2 sand bags
Great Coats (8 in a bale)	4(e)	22	656	80	40	16

Grenades hand or rifle No 36 (12 in a box)	1	27	250	30	15	6
Boxes						
Gun Lewis in chest Package			96	11	5	2
Gun Vickers in chest Package			94	11		2
Iron corrugated 6 sheets width 2' 6" (19 lbs.)	2 sheets	33	350	42	20	
Iron 24 S W G 7' sheets width 2' 6" (23 lbs)			200	34	16	.
Iron 24 S W G 9' sheets width 2' 6" (29 lbs)			230	27	14	..
Joists steel rolled 9' × 5" × 3" (100 lbs)			67	8	4	.
Kettles camp 12 qts Mk III (in bundles of 8)	3(e)	30	656	80	40	16
Magazines Lewis Gun (50 in a chest)			4 800	550	250	100
Metal expanded 6 × 6 × 3' (in cases of 20 sheets)	1 sheet	27	200 sheets	30 sheets	14 sheets	
Mounting, tripod in chest			130	15	8	3
Nails (a)						..
Pegs picketing No 1, 2 or 4 (in bundles of 30)	14(e)	35	2 700	330	150	60
Pickets—						
Angle long 6	2(e)	32	420	50	25	10
Angle Medium 3' 6"	4(e)	36	750	90	45	18
Angle short 2	(e)	36	1 500	180	90	36
Brushwood—long	4(e)	36	750	90	45	18
Brushwood—short	8(e)	36	1 500	180	90	36

Articles.	One man load.		Transport			
	No.	35 lbs. weight lbs.	3 ton lorry (4)	A. T. Cart at 200 lbs	Camel at 400 lbs	Mule at 160 lbs
1	2	3	4	5	6	7
Pickets—contd.						
Angle Long at 11 lbs. each (In bundles of 5)	3	23	600	70	35	15
Angle Medium 6½ lbs. each (In bundles of 10)	5	22½	1,000	120	60	20
Angle Short 3½ lbs. each (In bundles of 10)	10	35	1,920	240	120	60
(post) long 5' at 10 lbs. . . .	3	30	672	80	40	16
(post) short 2' 6" at 4 lbs. . .	8	22	1,680	200	100	40
Screw, long 6½ lbs. (In bundles of 10)	5	22½	1,020	120	60	20
Screw, short 3½ lbs. (In bundles of 10)	10	22½	2,040	240	120	60
Piling—						
6" at 12½ lbs. per ft. run			650 ft.	65 ft	22 ft	"
4" at 8½ lbs. per ft. run	4 ft.	23 lbs	810 ft	97 ft.	60 ft.	"
2" at 3½ lbs. per ft. run	19 ft.	27 lbs.	1,700 ft	212 ft.	106 ft	"
1" at 1½ lbs. per ft. run	29 ft.	23 lbs.	4,050 ft.	400 ft.	240 ft	"
Rifles Fixed with bayonets and scabbards (In boxes of 20).	.	..	19	2	1	"
Rifles Loose	4	26	750	90	46	18

Ropes— picketing 4 9" (In bundles of 100)	50(e)	30	9 900	1 700	600	200
Heel 10½ (In bundles of 50)	20(e)	35	3 700	450	200	100
Rugs Horse— Large (In bundles of 8)	8(e)	30	656	80	40	16
Small (In bundles of 8)	5(e)	35	744	88	40	16
Sheets Ground (In bundles of 10)	5(e)	35	900	100	50	0
Shoes Horse— (Artillery) (In bundles of 25 prs)			2 600	300	150	50
(Cavalry) pony and mule (In bundles of 50 prs)			4 500	550	250	100
Shoes— G S	10	36	1,850	200	110	45
R E.	6	34	1 180	140	70	28
G S 3½ lbs each	10	35	1 920	228	114	46
R E 5½ lbs each	6	23	1 200	145	72	28
S A.— Box of 1 000 rounds (charger packed)			89	10	5	2
000 rounds (bund e packed)			94	11	5	2

Articles.	One man load.		Transport			
	No	35 lbs weight lbs	3 ton lorry (d)	A. T Cart at 800 lbs	Camel at 400 lbs	Mule at 160 lbs
1	2	3	4	5	6	7
Tapes, Tracing 50 yds (Rolls)	12					
Tents I P (packed)—						
Field Hospital (complete)			41	5	2	1
Officers Mk II (80 lbs)			63	8	4	1
100 lbs			45	5	2	1
80 lbs.			66	8	4	1
40 lbs.			132	18	9	4
21 lbs.	1	20	305	36	18	7
Timber—						
Hardwood . . Cu. ft.		.	132	18	9	3
Softwood		.	192	22	11	4
Various at 40 lbs per cu. ft. . ..	1	40	169	20	10	4

Wire—						
Barbed coils @ 28 lbs on reel . . .	1	28	200	28	14	6
Galvanized coils 14 S W G (28 lbs. coils)	1	28	200	28	14	6
Netting rolls 3 × 50 yds	90 yds	30	70 rolls	10 rolls.	5 rolls	2 rolls.
Road netting—Rolls 12 ft. × 95 yds weight 4½ cwt.			5(e)			

Weights of items usually issued in bundles sacks etc are calculated to the nearest full pounds
(a) Nails 1 inch = 800 to 1 lb 2 inch 122 to 1 lb 3 inch 52 to 1 lb 4 inch 30 to 1 lb 5 inch 19 to 1 lb 6 inch 11 to 1 lb
(b) Staples No 8 S W G 50 to 1 lb
( ) Owing to its bulk the 30 cwt and 3 ton lorries carry the same amount which includes the necessary pickets
(d) 30 cwt lorry will take half the load of a 3 ton lorry
(e) Loose.

I. SUPPLIES —

Article		Mule	Camel	Vehicles.					
				Ford Van.	15 cwt., Tender	30 cwt., Lorry	L G S Wagon	A. T Carts	3 ton, Lorry.
1		2	3	4	5	6	7	8	9
Biscuits Rations (60-lb.)	cases	2	6	13	28	56	26	13	112
Flour, rice Salt, refined, Atta, Barley Gram, Linseed Maize, Oats, Dhall (60-lbs.)	bags	2	6	10	21	42	19	10	84
Meat, Tinned (48-lb.)	cases	2	9	18	37	74	34	18	148
Milk Tinned liquid evaporated (48-lb.)	"	4	10	22	46	93	62	22	186
Sugar (80 lbs.)	bags			6	21	42	16	8	84
Bran (80-lbs.)	"	2	5	7	21	42	17	10	84
Bacon (1 and 2-cwt.)	cases		..	7 and 3	15 and 7	30 and 15	20 10 26	7 3 13	60 and 30 112
Bovril Lemco (2-oz., 4-oz., and 8-oz. jars packed in 60-lb cases).		2	6	14	28	56			
Cheese (cases of 60 × 10½-oz.) (say 40-lb. cases)	tins	4	10	20	42	84	50	20	168
Ghi 70-lb. cases (2 × 35-lb.)	"	2	6	11	24	48	28	11	96
Jam (48-lb.) . . .	cases	2	8	17	35	70	32	16	140

l, Cooking (4-gal. drum weighing approx 46-lb)	2	8	17	35	70	32	16	140
atmeal (60 lb) . cases	2	6	13	28	56	26	13	112
am, (cases of 12 bottles weighing approx. 50 lb gross)	2	8	16	33	66	45	16	132
a ration, (100 lb . 100-lb		4	8	16	32	22	8	64
and 50-lb. chests). 50 lbs	2	8	16	33	66	44	16	132
rewood . . . loose mds.	1†	2½†	7	27	42	11	6†	84
bundles . . . . mds	1†	3†	10		34		8†	84
ay baled (80-lb) . . mds.	2	5	6	17	25	16	10	76
hoosa (baled) . . . „	2	5				21	10	84
trol (2 gall cans) . . empty	. *	. *	30	100	20	60	*	400
full	. *	. *	30	80	175	50	*	320

* Unsuitable, should not be loaded
† Varies with type of wood.

CHAPTER XI

MEDICAL.

(For detailed instructions on this subject see F S R Vol I and additions for India and R A M C Training)

50 GENERAL ORGANIZATION.

[illegible]

The D M S and his representatives are assisted in their administrative duties by assistant directors or deputy assistant directors of medical services

HYGIENE ORGANIZATION

General

3 The importance of measures whereby the health and effective strength [illegible]

In a Formation

4 The commander of every formation is responsible for the health and well being of the troops under his command and for applying all measures necessary to that end and for the prevention and mitigation of disease

He is also responsible for the sanitary condition of the area occupied by his command irrespective of the period for which it may be occupied and for seeing that officers and other ranks obey all orders regarding health and sanitation.

5 The Director of Hygiene and Pathology at General Headquarters is represented in the field by an assistant director of hygiene with the headquarters of an Army and by a deputy assistant director of hygiene at the headquarters of each infantry division In a cavalry division hygiene duties are performed by the D A D M S

These officers will —

1. Act as technical advisers of the administrative medical officers of the formations and sub-areas to which they are allotted, and will furnish skilled technical advice to unit medical officers and others when necessary

[illegible]

iv Advise [illegible]

v Advise regarding the purification and distribution of water for drinking purposes

6 A sanitary section is allotted to each division and cavalry division and to army base and I of [illegible] areas as required They are under the direct [illegible] the formation or [illegible] ary police in an [illegible]

REGIMENTAL

Commanding Officer

[illegible]

Officer in Medical Charge of a Unit

8 Advises the C O on all matters relating to the preservation of the health [illegible]

Trained subordinate personnel

9 *Water duties*—Personnel specially trained in methods of purification and protection of water supplies They have charge of the water carts and of any apparatus or chemicals issued for sterilization of water [illegible] an apparatus additional to normal allotment is [illegible]

unit in connection with disposal of excreta and refuse, construction of latrines urinals soak pits etc

11 *Chiropody*.—One specially trained man is allotted to certain dismounted [illegible]

Medical Unit of a Force in the Field

12 *Medical Establishment with units*.—Regiments of cavalry and infantry battalions have a medical officer attached to them Smaller units [illegible]

Numbers are calculated to afford beds for 10 per cent of the British troops [illegible]

13 *Base and Advanced Depots of Medical Stores* Reserve base and depots of medical stores receive medical supplies in bulk and supply the [illegible]

Evacuation and Treatment

13 Sick are sent by the D O of the units and are if necessary detained at their regimental aid post (which is usually at unit headquarters) or sent to a field ambulance for treatment or evacuation If evacuated from the divisional area they are struck off the strength of their unit

A wounded man is attended to in the first instance by the unit medical personnel. He is then either carried by the regimental stretcher bearers or [illegible]

local conditions

Dental Treatment

15 Army Dental Corps personnel for the provision of dental treatment will be attached to general hospitals and if possible, to casualty clearing stations, on mobilization

First Field Dressing

16 Every officer and man carries in the field a dressing which is placed in [illegible]

Treatment of Cases of Emergency

17 (1) *Gassed cases*.—Men who have been exposed to gas even slightly, should not be allowed to walk or otherwise exert themselves, but should be carried or at least assisted (if no form of ambulance transport can be procured for them), to the nearest aid post or dressing station. Care must [illegible] not to remove their respirators so long as [illegible] skin [illegible] with [illegible] [illegible] from [illegible] [illegible] first [illegible] wound, and [illegible]

unit in connection with disposal of excreta and refuse, construction of

Medical Unit of a Force in the Field

12 1 *Medical Establishment with units*—Regiments of cavalry and infantry battalions have a medical officer attached to them smaller units have similarly one assistant surgeon or a sub assistant surgeon attached Each unit is provided with field medical equipment consisting of a pair of panniers a companion and haversack and a Horrocks water testing apparatus The stretcher bearers of the unit are placed under the orders of

Numbers are calculated to afford beds for 10 per cent of the British troops

xi *Base and Advanced Depots of Medical Stores* Reserve base and depots of medical stores receive medical supplies in bulk, and supply the Advanced Depots The latter issue to medical units Regimental medical officers obtain their supplies from the nearest medical unit of their formation

xii *Laboratories*—These are located at bases, on the L of C and with an army in the field as necessary.

xiii *Hospital Ships* have a capacity of about 250 beds They are fitted and staffed to afford all necessary treatment on the voyage.

Evacuation and Treatment.

13 Sick are seen by the M O of the unit and are, if necessary, detained at the regimental aid post (which is usually at unit headquarters) or sent to a field ambulance for treatment or evacuation If evacuated from the divisional area they are struck off the strength of their unit

A wounded man is attended to in the first instance by the unit medical personnel. He is then either carried by the regimental stretcher bearers or walks to the Regimental Aid Post. Thence he is carried by the bearers of the Field Ambulance to the Advanced Dressing Station or direct to the Main Dressing Station. From the Advanced Dressing [illegible] the "Q" staff for transport and despatch those sick to the nearest ordnance depot or dump. Modifications of this procedure may be made to suit local conditions.

Dental Treatment

15. Army Dental Corps personnel for the provision of dental treatment will be attached to general hospitals, and if possible, to casualty clearing stations on mobilization.

First Field Dressing

16. Every officer and man carries in the field a [illegible] [illegible]

Treatment of Cases of Emergency

17. (1) *Gassed cases.*—Men who have [illegible] be obtained with the utmost speed [illegible] skilled medical [illegible]

Should smart bleeding still continue apply direct pressure between the wound and the heart with the hand If this is unavailing resort should be had to some form of tourniquet

A tourniquet can be quickly improvised by tying a handkerchief or putter around the limb between the wound and the heart, and then by introducing a stick or bayonet underneath and twisting, the constriction can be increased until the bleeding ceases The stick is then secured to prevent untwisting

A tourniquet should only be used as a last resort. If wrongly applied

also run out

Immediately after making the downward pressure swing backwards

stroke and severe electric shock

vi *Fractures*—It is of the utmost importance to protect a fractured limb with some form of splint

— and at once for medical assistance. Look for the source of the poison. Try to lessen the poisonous effects by giving the

proper remedy called an antidote The labels of bottles containing poisons frequently have the antidotes printed on them. Poisons are classified as —

(a) Corrosive
(b) Irritant
(c) Systemic (constitutional)

Symptoms —(a) Great pain immediately after poison has been swallowed in mouth and throat which look as if scalded Lips stained and blistered shock difficulty [illegible]
(b) Pain at first is not [illegible] and vomiting sets in acco[illegible]
(c) No sign of burning [illegible] of slight drowsiness difficu[illegible] sions

Treatment —

(a) *Corrosive* —Do not give emetics If available scrapings from whitewashed walls or ceilings mixed with water should be given
(b) *Irritant* and (c) *Systemic* —Give emetics For example a tablespoonful of mustard or salt to a tumbler of water An emetic *promptly given may save the patient's life*

[illegible]

51 MAINTENANCE OF HEALTH.

(*For further details of the subjects dealt with in this section, see Army Manual of Sanitation*)

General

1 A war cannot be waged successfully unless due regard is paid to the maintenance of the health of troops There are many examples in history where neglect of this precept has led to disaster

Cleanliness

[illegible]

(a) *Disinfestation* —Each unit should be provided with an portable type of disinfector, which will be sanitary personnel of the unit

(b) *Bathing*—"six-spray" shower bath apparatus should be provided on the basis of one for each brigade or body of 5 000 troops held under corps control, and sent forward when required

(c) *Laundry*—Mobile laundries should be provided on the basis of one for each 20 000 troops, held on L. of C. and sent forward on demand by army and corps for allotment to divisions

ii *For troops on L of C*—Suitable disinfestation, bathing and laundry arrangements must be organized.

Care of the feet, hands and face

5 The chief causes of sore feet are ill fitting boots and socks, combined

side

8 *To protect the hands and face from frostbite*—Smear them with vaseline,

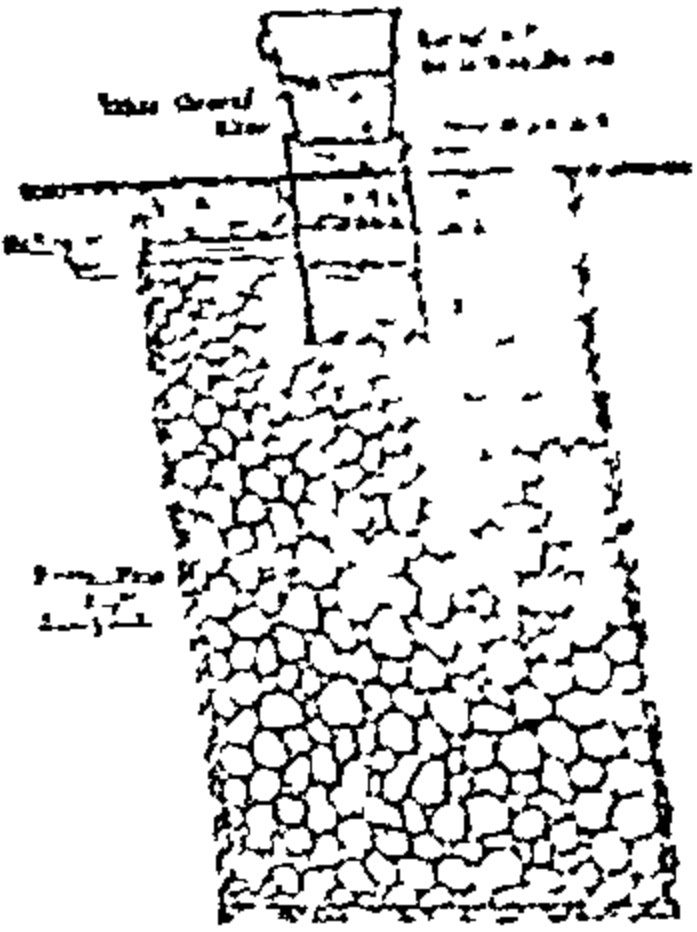
CAMPS

10 In all camps and bivouacs the utmost care will be taken to prevent

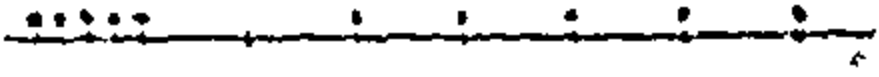
[illegible]

GREAT SALTAGE TRAP [illegible]

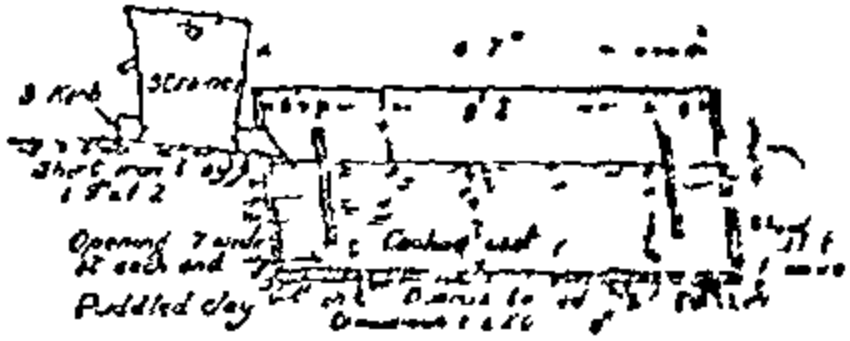
[illegible] 1—GREAT [illegible]



SECTION



[illegible] 2—COLD WATER CREEK TRAP [illegible] CAMPS



Wooden cover required which must be [illegible]

[illegible] the proportion of [illegible]

PRECAUTIONS AGAINST DISEASES CONVEYED BY FOOD AND DRINK

[illegible] The [illegible] important diseases in this class are *diarrhœa, dysentery, cholera* and [illegible] *of enteric a*

[illegible] measures against these diseases are —

[illegible] destruction of flies
[illegible] possible
[illegible] proper disposal of excreta
[illegible]
[illegible] supply of drinking water
[illegible]
[illegible] all ranks to the common sense rules of hygiene
[illegible]

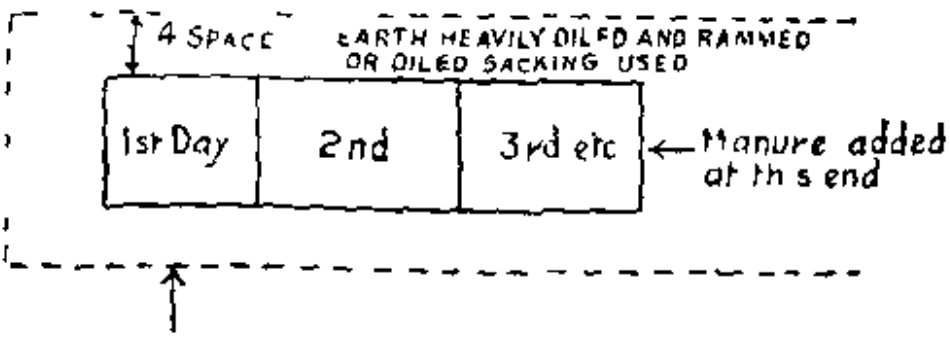
[illegible] admission to hospital for dysentery or [illegible] fever will be employed on any duty in [illegible] or in connection with the purification or st[illegible] water

[illegible] or other places must receive c[illegible]

[illegible] —[illegible] food—human food, [illegible] the fly and also stop it [illegible]

[illegible]

[illegible] —All [illegible] must be removed [illegible] cannot be carried out [illegible] off on three sides [illegible]



Barrier to prevent loading except at one end of heap
FIGURE 20 — Area for close packing of horse manure

The base of such a manure heap needs much attention The ground should be heavily oiled and beaten into a hard smooth surface extending over the area where the heap is to stand and for 4 ft beyond in every direction Oiled sacking may also be used folded in at the edges so that

when the heap is completed the overlap may be pulled out and used to cover the sides of the heap as an effectual larva trap

18 In very hot weather with the approval of the hygiene officer con-

receptacles water tight and

and the contents (with the ex

i [illegible] that there is no possibility of contaminating water supplies

ii Du

iii Fly

numbers

iv Filled in when the contents come to within two feet of the ground surface

When filling in the trench the earth must be well rammed down the upper 6 to 9 inches being puddled if the nature of the soil permits or moistened with heavy oil Deep trench latrines cannot be used where the level of the subsoil water is high.

25 Bucket latrines must have—

The contents of the receptacles will be disposed of by incineration (which

PLATE XXXVI

LATRINES

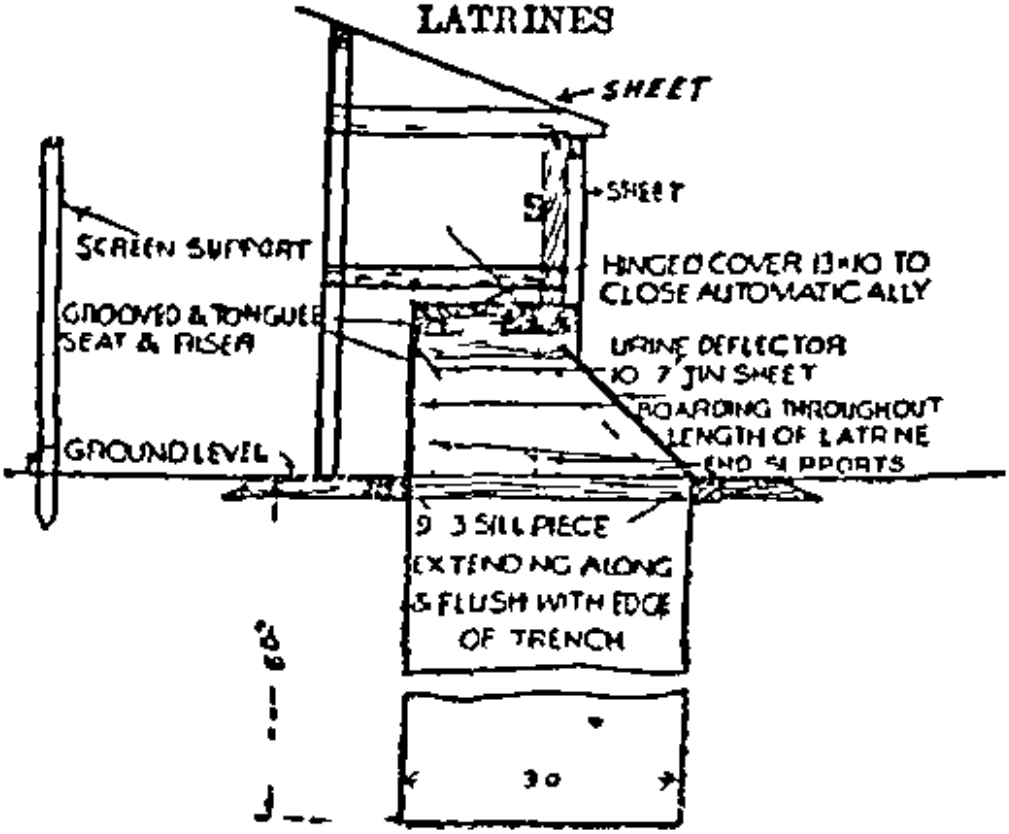


FIG 1 FIG D LATRINE DEEP TRENCH FLY PROOF TYPE.

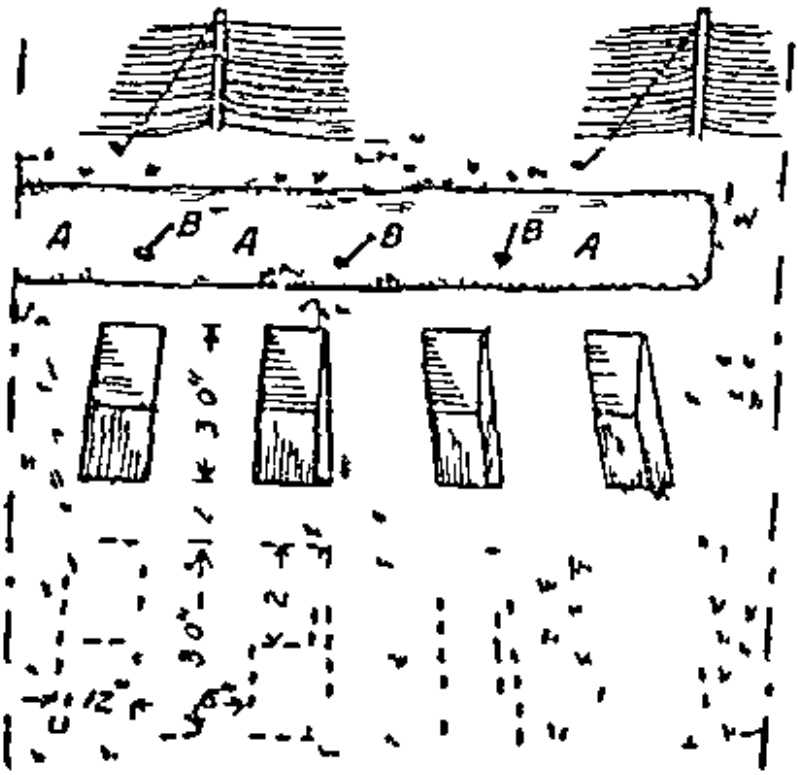


FIG 2 SHALLOW TRENCH LATRINE
A—EXCAVATED EARTH
B—SHOVELS OR SCOOPS FOR APPLYING EARTH TO EXCRETA

PLATE XXXVI—*contd.*

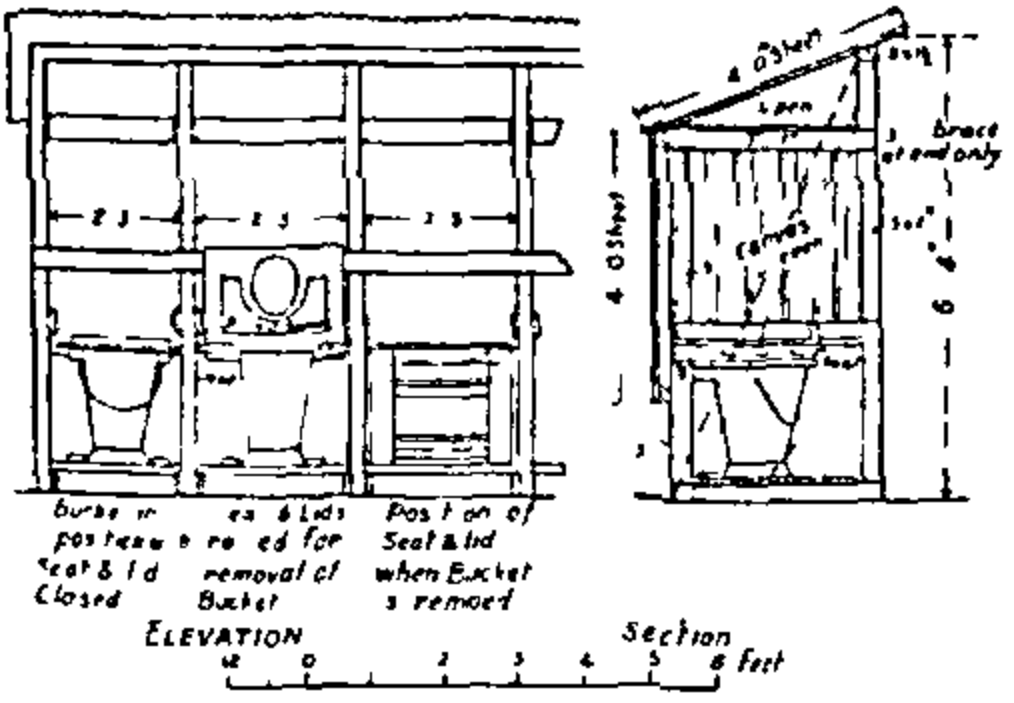


FIG 3 BUCKET TYPE LATRINE

FIG 4
ABDUST or washing place for Indian latrine

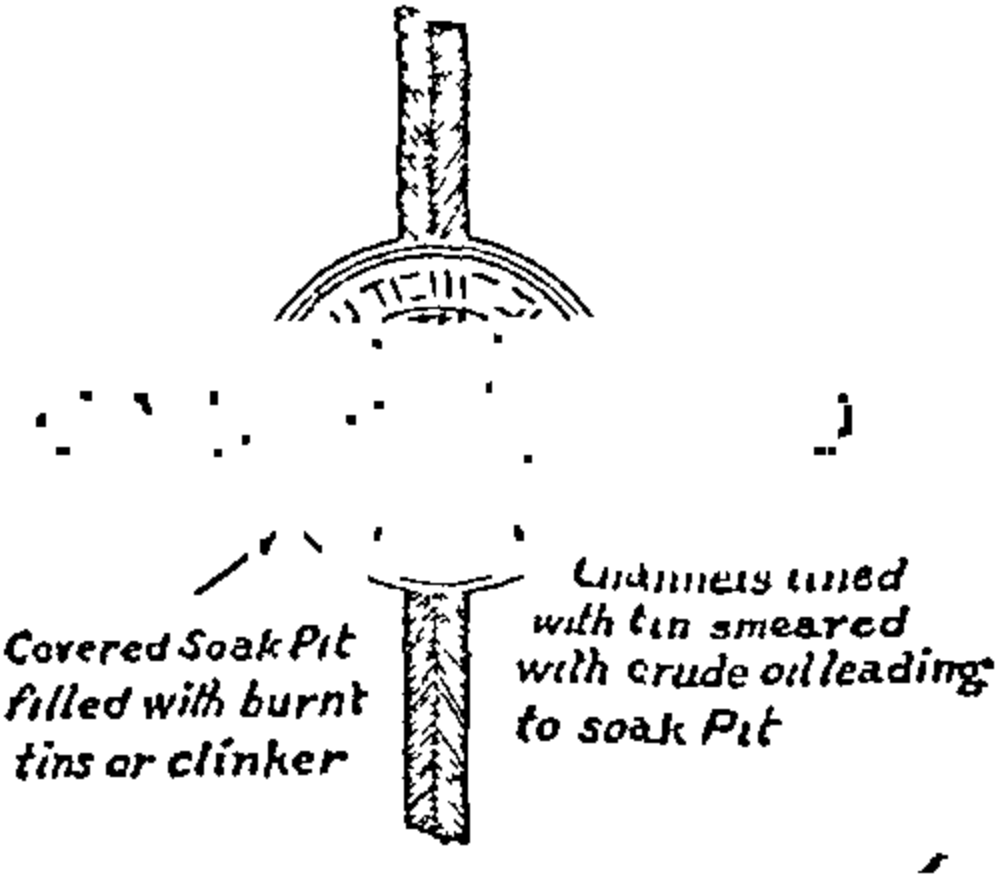
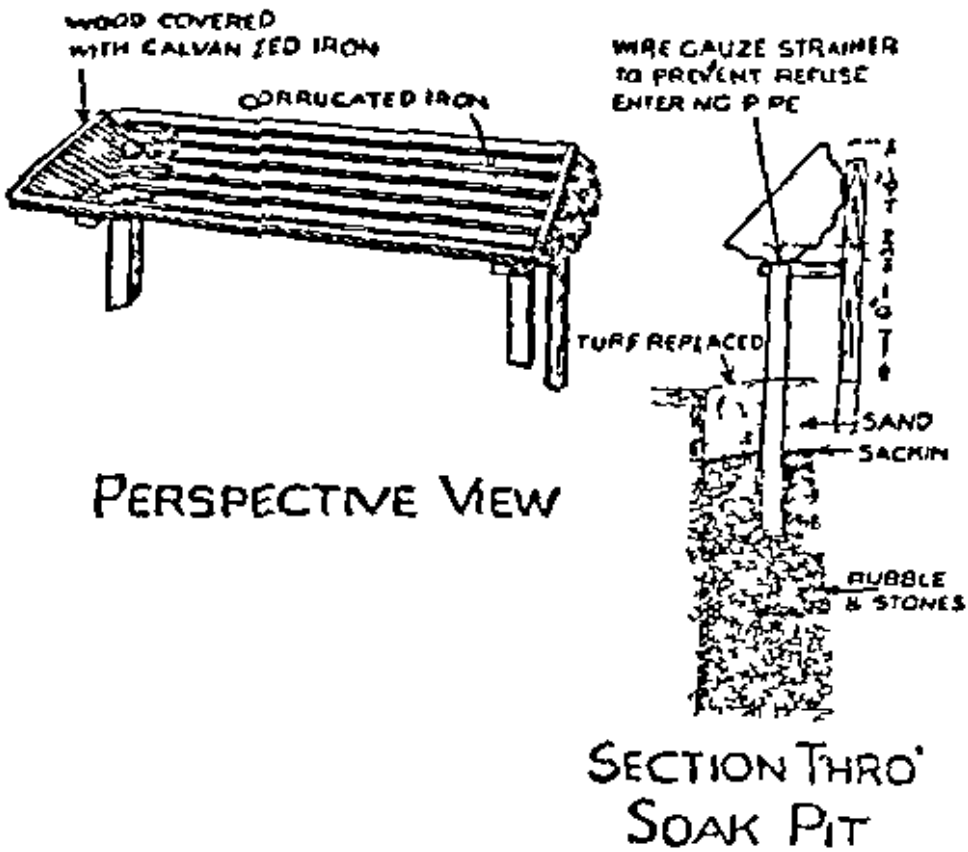


PLATE XXXVI—*concld.*

To follow Fig 4.

FIG 5



not kept up to the mark there is no greater source of ill health and consequent loss of man power

Open trench latrines (PLATE XXXVI Fig 2) will only be used for short halts or for camps not lasting more than a day or two They should be three feet long two feet deep and one foot wide

26. *Urinals*—The best type of field urinal for day and night use, is [illegible]

i. The floor when not of concrete will be of broken stones or gravel well rammed down
ii. The seats will be scrubbed daily with cresol solution (½ oz to 1 gallon)
iii. Covered boxes will be provided for latrine paper
iv. Where shelter from weather is provided the structure must be well ventilated and the walls whitewashed inside

It should never be possible to detect a latrine by sense of smell [illegible]

Trained water-duty personnel employed as such, should never be used for fatigue or general sanitary duties

37. All receptacles for the storage or carriage of drinking water should be regularly inspected and cleaned, as follows —

i. Main storage tanks should be cleaned and disinfected when necessary by arrangement with the engineer officers concerned.

ii. All other tanks also water carts, pakhals, or any receptacles used for the conveyance or storage of drinking water should be emptied and thoroughly cleaned twice a week. All receptacles except those in which the actual chlorination of water is carried out,

[illegible]

[illegible]

PRECAUTIONS AGAINST MALARIA.

40. Malaria results from the bites of infected mosquitoes. It can be

[illegible]

[illegible]

PLATE XXXVII

MOSQUITO PROOF DUG-OUT.

FIG. 1.

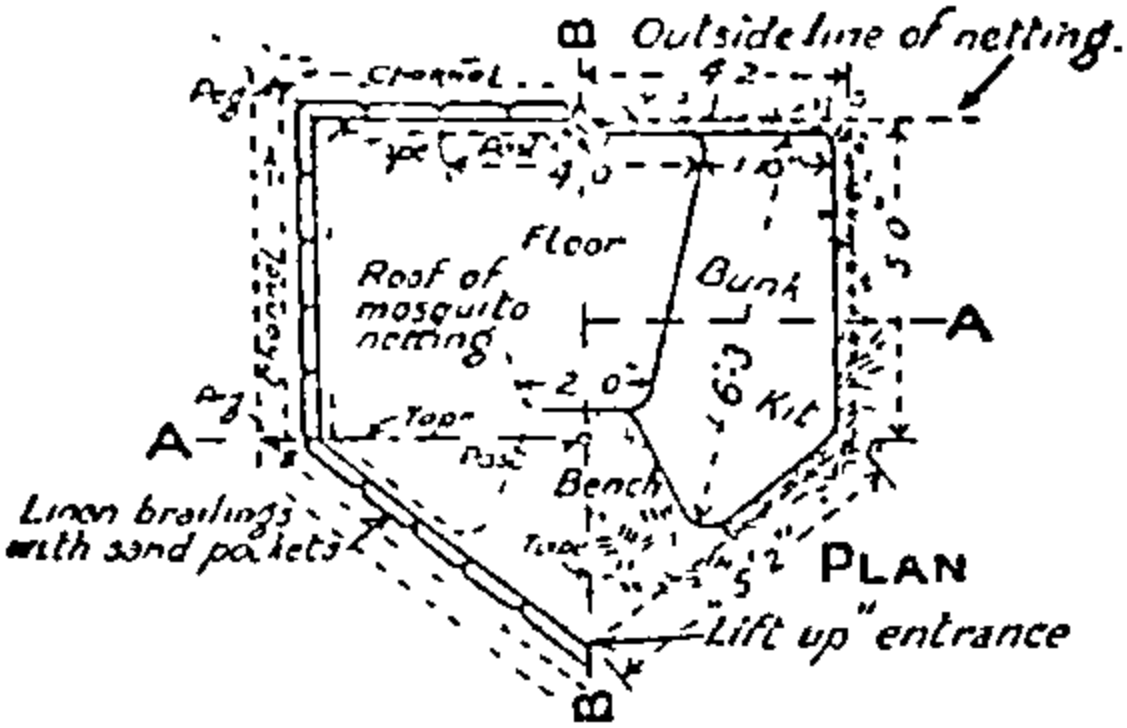


FIG 2

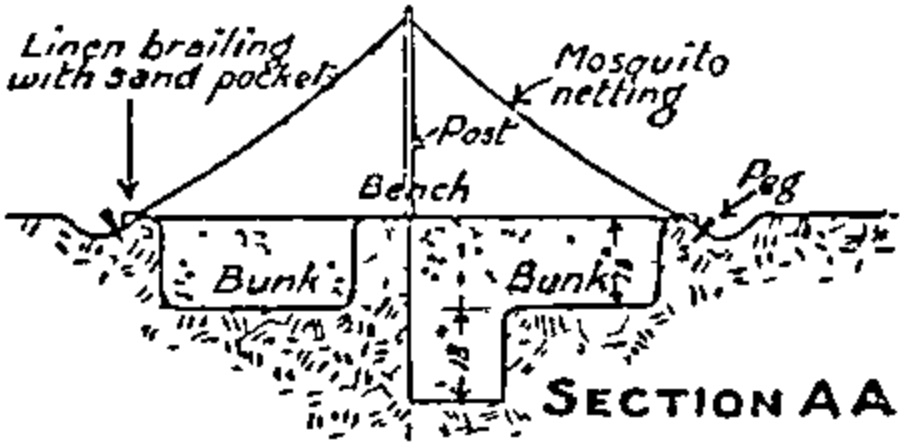


FIG 3

SECTION BB

39 It should be strongly impressed on all ranks that cholera, dysentery,

PRECAUTIONS AGAINST MALARIA

42 Mosquitoes breed in water especially in stagnant or slow moving water, and in collections of water (e g fire buckets) in camps or quarters During the daytime the adult insects shelter in houses barns huts crevices

PLATE V

MOSQUITO PROOF HUT-OUT

Fig 1

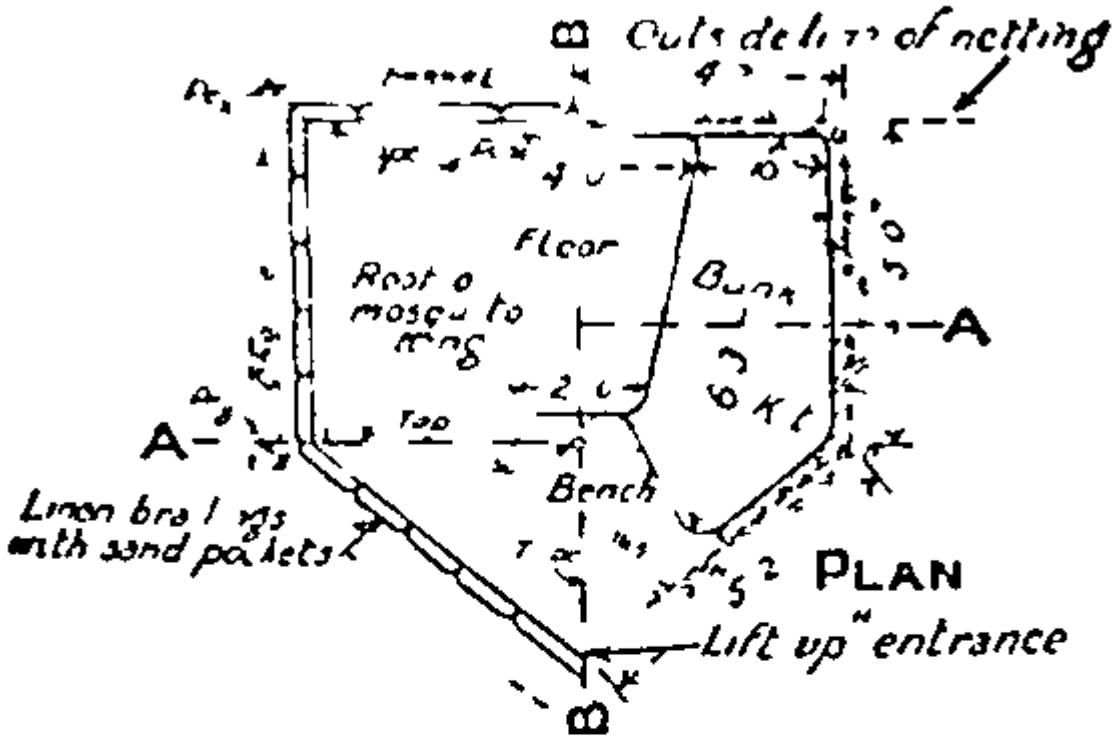


Fig 2

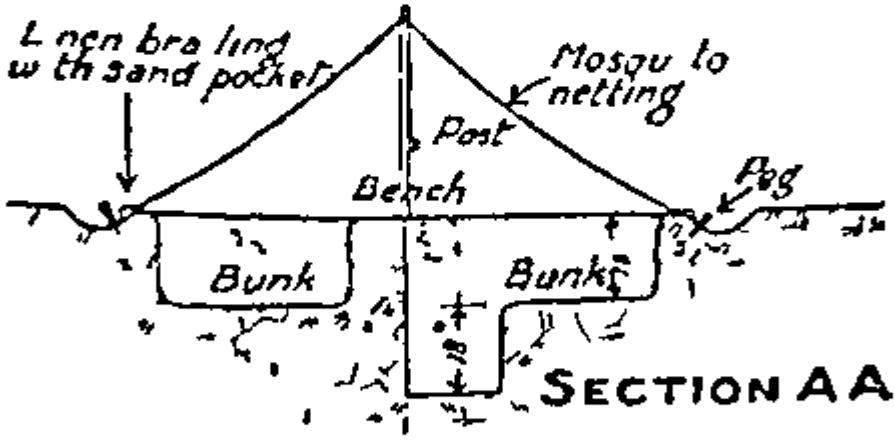
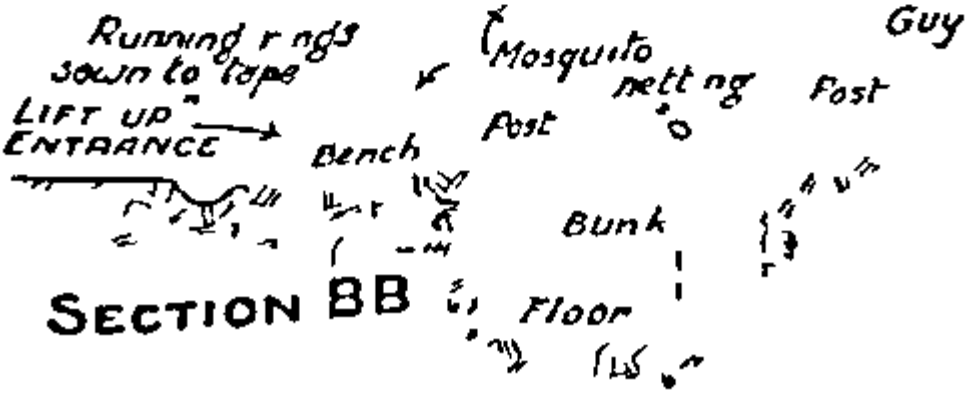


Fig 3



PRECAUTIONS AGAINST PHLEBOTOMUS FEVER (SANDFLY FEVER)

or inner soles should be worn and to allow of this when new boots are issued they should be large enough to admit of two pairs of socks and these should be worn at the time of fitting the boots

51 Before going on duty in wet trenches or to exposed positions, or on convoy the legs and feet and the hair in the case of transport personnel will be washed and dried whenever time permits [illegible]

52 When wearing gum boots the socks may be supported by some form [illegible] to the [illegible] to the [illegible] warmed at a [illegible]

PREVENTIVE MEASURES IN UNITS AND FORMATIONS

54 Commanding officers will ensure not only that fair treatment of those measures are provided but also that they are systematically carried out

55 When the onset of trench foot or frostbite is probable the following measures will be strictly carried out —

i [illegible]

ii [illegible]

iii [illegible]

iv Whenever the situation admits, men should sleep with boots and puttees off, the feet being wrapped in blankets newspapers, straw or hay, etc In any case the boots must not be tightly laced

v At the end of a tour of duty men should be marched to a specially [illegible] arranged.

HEAT STROKE

61 The chief factors which may cause this condition are :—

(a) Continued exposure to high temperatures especially when the air is damp and when there is insufficient ventilation and lack of circulation of air around the body due to tight or excessive clothing

(b) Over indulgence in food or alcohol,

(c) lack of sufficient suitable fluid to drink,

(d) infection including particularly malaria and the results of constipation

(e) ill timed physical exertion

62 The early warning signs of the onset of heat stroke are —

i a frequent desire to urinate

ii a dryness of the skin due to stoppage of sweating,

iii giddiness and headache—a feeling as if the head were going to burst,

iv intolerance of light

[illegible]

HEAT EXHAUSTION

64 *Heat-exhaustion may overtake heavily laden or overclothed persons* working in a hot climate It is a form of fainting attack Removal of loads garments equipment etc and rest in the shade will usually effect recovery In all severe cases medical aid should be sought at once

SUNSTROKE

65 Sunstroke may occur suddenly as a result of exposure to the sun's rays It is often associated with heat-stroke (*see* para 61)

SNAKE BITE

66 The bite of a poisonous snake may often be recognised by the two punctures made by the poison fangs these are larger and more distinct than the marks of the other teeth

The bite of a harmless snake usually shows rows of small equal-sized punctures

Neither of these rules is invariable

67 The best first aid treatment for the bite of a poisonous snake is as follows —

(a) At once tie a tight ligature around the limb between the bite and the [illegible]

(c) Rub some crystals of permanganate of potash into the wound

(d) Obtain medical assistance *as quickly as possible* preferably at a Hospital

N.B —It is a mistake to drink spirits after being bitten by a snake, hot strong coffee is the best stimulant.

DOG BITE

NOTE —In addition to dogs among domestic animals, horses and cats may develop rabies among wild animals jackals wolves and hyenas are the commonest to develop this disease

68 The signs of rabies in dogs are often very indefinite From the practical point of view it is wise to assume that a dog has rabies and to obtain medical or veterinary advice in cases of —

(a) a short illness ending in death

(b) [illegible]

69 [illegible] should be obtained

Any person bitten or licked should apply to a medical officer for instruction regarding their treatment

70 *Note* —A lick by a rabid animal on a scratch or abrasion may cause infection as much as a bite

First aid —Wash the wounds thoroughly and at once have them cauterized [illegible]

VETERINARY HINTS FOR COMMON AILMENTS AND INJURIES, WHEN VETERINARY ADVICE IS NOT AVAILABLE

5 Anthrax —

6 Bit injuries —

Treatment —Work in snaffle or with bridle over nose; improvise martingale if necessary Rinse mouth out with clean water after feeding

7 Broken knees —

Treatment —Cleanliness apply tincture of iodine and cover with clean pad of lint, wool or tow, and bandage

8 Bullet wounds —

Treatment —Observe cleanliness in all treatment of wounds Dust with boric acid and cover with clean pad of lint, wool or tow, and bandage which must not be applied tightly unless to stop bleeding

9 Bursati —

10 Colic —

11 Constipation —

Treatment —Soft food and green also, if available, regular work and frequent enemas

12 Coughs and colds —

13 Cracked heels and mud fever —

Treatment —Cleanse and dry (if greasy apply dry bran poultices), dust on boric acid or powdered starch.
Prevention.—Do not wash legs when muddy, but leave until dry and then brush dirt out.

14 Cuts and tears —

Treatment.—As for 7 bandage if necessary

15 Diarrhœa —

Treatment —Dry bran. Keep body warm with rugs and bandages.

16. Dirty sheath —

Treatment —Draw out penis and wash it and sheath with soap and warm water or dirt will accumulate and maggots may appear.

17 Epizootic lymphangitis —

Symptoms —Sores similar to and in similar situations to farcy They have a greater tendency to heal They usually originate from wounds from which point cord like swellings appear It is on the course of these swellings that the sores form.
Very contagious
Treatment —Proceed as for glanders

18. Exhaustion after hard work —

Treatment —Give a carbonate of ammonia half or pint of warm beer or half tumbler of rum or whisky in a pint of water Rug up and bandage Rest and light exercise Feed with bran mashes steamed oats boiled linseed, oatmeal, gruel, etc, if available, in small quantities and often.

19 Farcy —

Symptoms —Skin form of glanders Appears as a string of running sores, usually on inside of hind legs, occasionally neck and face No tendency to heal
Treatment —Proceed as for glanders.

20 Fever —

21 Foot and Mouth Disease —

Affects cattle only

22 Girth galls :—

Treatment —If simply a swelling lightly smooth over the swollen

23 Glanders :—

Symptoms —Thick gluey discharge from one or both nostrils, ulcer

Pr

24 Heel rope galls :—

25 Lice :—

Found in camels and horses Can be seen by separating the hair and examining the roots The eggs appear as tiny whitish specks Lice cause severe irritation

Treatment —Clip the animal and burn the hair Wash all over with a mild antiseptic, *e g*, phenyle or cresol, or with a decoction of tobacco (4 ounces tobacco boiled in a gallon of water)

26 Lock jaw (Tetanus) :—

Caused by a germ which gains entrance through wounds

27 Mange —

28 Rinderpest (Cattle Plague) —

Affects cattle only

[illegible]

29 Ringworm —

Symptoms —Hair falls out in circular patches

Treatment —Clip affected parts and burn clippings Wash animal all over with some disinfectant (*i e*, Cresol, 1 part in 80 of water) Apply tincture of iodine, paraffin, or soft soap to spots Disinfect harness, etc Obtain veterinary aid

30 Sand colic —

Prevention —Feed off blankets etc Clean food.

Treatment —Same as for Colic

31 Sore backs and saddle galls —

Prevention —Careful supervision and fitting of saddlery

Treatment —If swelling only treat as for "Girth Galls" or bathe with cold salt water If skin chafed treat as for wounds Keep saddle off back until healed

32 Sore withers —

Treatment —Keep arch of saddle well clear of withers If swelling only treat as for "Girth Galls" or bathe with cold salt water If skin broken, treat as for wounds

33 Sprained tendons, etc —

Treatment —Rest Apply cotton wool and linen bandage and stand in cold water or apply layer of soft clay Renew when dry

34 Strangles —

Symptoms —Swelling at the back of or under the jaw, may be some difficulty in swallowing

Treatment —Isolate and obtain veterinary aid Rest soft food rug up and bandage plenty of fresh air and foment swelling, when swelling bursts treat as for wounds

35 Surra —

[illegible]

Procedure —Isolate a suspected case and obtain veterinary aid.

36 Thrush —

Prevention —Dry standings and pick out feet daily

Treatment —Clean frog dress cleft with boric acid and then plug with piece of tow If severe poultice or soak foot before applying dressing Stand on driest ground available

37 Tick Fever (Biliary Fever) —

[illegible] transmitted by ticks and

[illegible]

38 Ticks —

Very common all over India especially in mud buildings and give rise to different diseases in animals Great care should be taken to keep animals free from ticks They may be removed after touching them first with paraffin If pulled off roughly the head may remain in the skin and cause festering

39 To make —

(a) Bran mash —Put 2 double handfuls of bran in a bucket and pour on as much boiling water as the bran will soak up Cover [illegible]

40 To shoot a horse —Lift up forelock and place it under brow band Place muzzle of revolver almost touching the skin where the lowest hairs of the forelock grow

41 Wounds —

[illegible]

will suffice

CHAPTER XIII

DISCIPLINE AND OFFICE WORK.

54. DISCIPLINE.

[illegible]

ARREST

[illegible]

arrest.

[illegible]

to perform [illegible]

Care will be taken to ensure that a soldier sowar, sepoy (or others ranking as such) under arrest is called upon to perform no duties in addition to these performed by soldiers, sowars, sepoys, (and others ranking as such) not under arrest or undergoing punishment

DISCIPLINE.

2 POWER TO DEAL SUMMARILY WITH OFFICERS AND WARRANT Under the Army Act. Section 47 (See also R. P. 9)

i. Powers may be exercised by—

(a) General officer or brigadier empowered to convene

(b) Officer appointed for the purpose by the Army Council. On active service
(c) O O C or A O C. Force, or
(d) Officer (not under rank of major general) appointed for the purpose by him

(ii) Any officer below rank of field officer and warrant officer may be dealt with summarily

(iii) Summary disposal of certain offences is limited by K R (1928) 546

(iv) Evidence if accused so demands will be taken on oath, or, if accused consents in writing, a summary or abstract of the evidence may be read.

(v) *Punishments*—

[illegible] ary

Forfeiture will not exceed 12 months' seniority or service, as the case may be (K R (1928) 555 and 556)

3 POWERS OF COMMANDING AND OTHER OFFICERS UNDER THE ARMY ACT

A commanding officer may *subject to the soldier's right to elect, previous to the award to be tried by district court martial* inflict the following *summary punishments* (K R 560) —

On a private soldier

i Detention not exceeding 28 days but the power of awarding deten- [illegible]

On a Non-commissioned officer

vi. Any deduction from the ordinary pay of a N. C O allowed by Section 138 (4) of the Army Act

A C O may also inflict the following *minor punishments*, the offender having no right to elect trial by a court-martial.—

Private soldier

vii Confinement to barracks, not exceeding 14 days
viii Extra guards or pickets as punishment for minor offences or irregularities, when on or parading for these duties
ix. Admonition

Non-commissioned officers

x Reprimand or severe reprimand
xi Admonition

NOTES —(a) Any N C O or man holding any appointment or acting rank or lance appointment may be ordered by his C O to revert to the rank (whether *permanent or temporary*) which he was holding at the time of appointment to acting rank or revert to any intermediate rank or lance appointment, but is not to be awarded for the same offence any other punish-

[illegible]

4 SUMMARY REDUCTION OF W O^s AND N C O^s UNDER THE ARMY ACT.

A W O or a N C O may be reduced to any lower grade or to the ranks by the Commander in Chief in India or by an officer appointed by him (see I A O 471 of 1927 for officers so appointed), and, on active service, by the officer commanding in-chief in the field or any general officer or brigadier, appointed by him (Sections 182 and 183 (2))

5 POWER TO DEAL SUMMARILY WITH OFFICERS AND WARRANT OFFICERS.

[illegible]

6 POWERS OF A COMMANDING OFFICER AND INDIAN OFFICER COMMANDING A DETACHMENT UNDER THE INDIAN ARMY ACT (SEC 20 AND R. A. I 238)

The following summary punishments may be awarded under the I A A (An accused has no legal right to claim trial by court-martial Note to I A A Rule 17)

To all persons subject to I A A other than I O^s, W. O^s and N. C O^s.

i Imprisonment not exceeding 28 days	By a C O*
Imprisonment not exceeding 7 days	By a C O below rank of field officer and an I O commanding detachment, if authorised by C O
ii Field Punishment not exceeding 28 days (On active service only)	By a C O
Field Punishment not exceeding 7 days	By an I O commanding detachment
iii Confinement to lines not exceeding 28 days	By a C O
Confinement to lines not exceeding 7 days	By an I O commanding detachment, if authorised by

To all persons subject to I A A other than I Os

iv	Extra guards and pickets	By a C O or I O commanding detachment if authorised by C O
v	Deprivation of acting or lance rank or position in nature of appointment or of corps etc pay for day on which an offence is committed or disrating up to [illegible] days	By a C O
vi	Deprivation of working pay for any day on which an offence connected with the work is committed	By a C O or I O commanding a detachment if authorised by C O
vii	Forfeiture of one rate of G S or G C pay	By a C O

To W Os and N C Os including acting N C Os

viii	Reprimand or severe reprimand	By a C O

To N C Os and privates

ix	Admonition	By a C O

To Non-combatants

x	Extra duties and working parties	By a C O or I O commanding detachment if authorised by C O.
xi	Fine to the extent of 7 days pay a month	By a C O (not awardable to Non-combatant W O)

To unenrolled followers subject to I A A under Section 2 (1) (c) on active service in camp on the march and at certain frontier posts

If not a menial servant (Section [illegible])

xii	Imprisonment not exceeding 30 days Fine not exceeding Rs 50	By a C O

If a menial servant

	Imprisonment not exceeding 7 days	By a C O

[illegible] *e service only*

		Divis on Brigade	Army or	Army Corps Independent

xiv	Penal deductions as authorised by Section 50 (f)	By a C O

V B —The powers of other officers and more detailed notes on the above punishments will be found in R A I 233

7 SUMMARY REDUCTION OF W OS AND N C OS UNDER THE INDIAN ARMY ACT

8 The Commander in Chief in India an officer commanding an army army corps command, division district brigade or brigade area or on active service the officer commanding the forces in the field may reduce to a lower grade or to the ranks any W O or N C O under his command (Section [illegible])

55 COURTS-MARTIAL

1 Under the Army Act

Description of Court-Martial	Minimum number of members.	Minimum service of members in years	Rank of President	Maximum powers.	Convening authority
G C.M.	5 (Sec. 48)	3 (Sec. 48)	F O (general officer or colonel if possible)	Death	The King or G O C. by warrant.
D C M.	3 (Sec 48)	2 (Sec. 48)	F O but if a F O is not available a captain may sit.	2 years Impt. H L.	G O C. or other officer having a warrant to convene a D C M
F G C.M.	3* (Sec. 49)	1	Same as for a D C M.	Same as G C M. (unless less than 3 members)	O C or any officer in immediate command of a body of forces on active service where G C M not possible or no superior authority

* *Except* that, if 3 officers are not available the court may consist of 2 officers.

Note —Officers can only be tried by G C M or F G C M

Any court-martial may award field punishment for any offence committed on active service and may in addition to or out further punishment sentence an offender to forfeiture of pay for a period not exceeding 3 months commencing on the of sentence

A sentence of penal servitude is ordinarily undergone in a penal servitude prison in the United Kingdom but where the nce is passed for an offence committed on active service part of the sentence not exceeding two years may be ordered to rved in a military prison. (A A. Section 58 proviso)

To all persons subject to I A A other than I Os

iv	Extra guards and pickets	By a C O or I. O commanding detachment if authorised by C O
v	Deprivation of acting or lance rank or pos t on in nature of appointment or of corps etc pay for day on which an offence is committed or distrating up to 28 days	By a C O
vi	*Deprivation of working pay* for any day on wh ch an offence connected with the work is committed	By a C O or I O commanding a detachment if authorised by C O
vii	Forfeiture of one rate of G S or G C pay	By a C O

To W Os and N C Os including acting N C Os

viii.	Reprimand or severe reprimand	By a C O

To N C Os and privates

ix	Admonition	By a C O

To Non-combatants

x.	Extra duties and working parties	By a C O or I O commanding detachment if authorised by C. O
xi	Fine to the extent of 7 days pay a month	By a C O (not awardable to a Non combatant W O)

To unenrolled followers subject to I A A under Section 2 (1) (c) on active service in camp on the march and at certain frontier posts

If not a menial servant (Section 2)*

xii	I nprisonment not exceeding 30 days Fine not exceeding Rs 50	By a C. O

If a menial servant

	Imprisonment not exceeding 7 days	By a C O

[illegible] e service only

[illegible] Army Army Corps, I vis on or Independent Brigade

xiv	Penal deductions as authorised by Sect on 50 (*f*)	By a C O

N B —The powers of other officers and more detailed notes on the above punishments will be found in R A. I 238

7 SUMMARY REDUCTION OF W Os AND N C. Os UNDER THE INDIAN ARMY ACT

§ The Commander in Chief in India an officer commanding an army army corps command divis on district brigade or brigade area or on active service the officer commanding the forces in the field may reduce to a lower grade or to the ranks any W O or N C O under his command (Section 19)

I UNDER THE ARMY ACT

Description of Court-Martial.	Minimum number of members.	Minimum service of members in years	Rank of President	Maximum powers.	Convening authority
G.C.M. .	5 (Sec. 48)	3 (Sec. 48)	F O (general officer or colonel if possible).	Death .	The King or G O C. by warrant.
D.C.M. .	3 (Sec 48)	2 (Sec. 48)	F O, but if a F O is not available a captain may sit	2 years Impt. H L.	G O C. or other officer having a warrant to convene a D C.M
S.M.	3* (Sec. 49)	1	Same as for a D C M.	Same as G C M. (unless less than 3 members)	O C. or any officer in immediate command of a body of forces on active service where G C.M not possible, or no superior authority

cept that if 3 officers are not available the court may consist of 2 officers
—Officers can only be tried by G C M or F G C M
urt martial may award field punishment for any offence committed on active service and may, in addition to or
ther punishment sentence an offender to forfeiture of pay for a period not exceeding 3 months commencing on the
ence
ence of penal servitude is ordinarily undergone in a penal servitude prison in the United Kingdom but where the
passed for an offence committed on active service, part of the sentence not exceeding two years, may be ordered to
n a military prison. (A. A. Section 58, proviso).

2 SUSPENSION OF SENTENCES UNDER THE ARMY ACT.

Under Section 57A of the Army Act the execution of a sentence on a soldier,

3 FIELD PUNISHMENT UNDER THE ARMY ACT

(a) He may be kept in irons, i e, in fetters or handcuffs, or both fetters and handcuffs and may be secured so as to prevent his escape

(b) Straps or ropes may be used for the purpose of these rules in lieu of irons

(c) He may be subjected to the like labour, employment and restraint, and dealt with in like manner as if he were under sentence of imprisonment with hard labour

4 UNDER THE INDIAN ARMY ACT

Description of Court-Martial	Minimum number of members	Minimum service of members	Rank of President	Persons triable	Maximum powers	Convening authority
G C M	6 (Sec. 57)	3 years	Senior member detailed (Sec 77)	Any person subject to I A A (Sec. 72)	Death (Sec 73)	C in C. or officer holding warrant (Sec 54)
D C M .	3 (Sec 58)	Not specified	Ditto	Do except officers (Sec 73)	2 Yrs rig imprt. (Sec 73)	Officer empowered to convene G C M or officer empowered by warrant from him (Sec 55)
S G C M	3 (Sec. 63)		Ditto	Any person subject to I A A (Sec 72)	Death (Sec 73)	O C. forces in field or officer empowered by him and in certain circumstances, O C. detached force (Sec. 62)
S.C.M. .	C O † (Sec 64)		.	Do below rank of W O (Sec. 75)	1 Yr rig imprt. (Sec. 76).	C O except certain offences (Secs 64 and 74)

† Proceedings must be attended throughout by 2 other officers either British or Indian

5 SUSPENSION OF SENTENCES UNDER THE INDIAN ARMY ACT.

Under the Indian Army (Suspension of Sentences) Act, 1920 (p 325 M. I.

6 FIELD PUNISHMENT UNDER THE INDIAN ARMY ACT.

(a) He may be kept in irons, that is to say, in fetters or handcuffs, or both fetters and handcuffs, and may be secured so as to prevent his escape

(b) When in irons he may be attached for a period or periods not exceeding two hours in any one day to a fixed object, but he must not be so attached during more than three out of any four consecutive days, nor during more than twenty-one days in all.

Explanation 1 —The offender must be attached so as to be standing firmly

back

the operation of clause (b) of sub-rule (2) but all offenders awarded field punishment shall march with their unit carry their arms and accoutrements, perform all their military duties as well as extra fatigue duties and be treated as defaulters

56 THE PROVOST SERVICE.

1 The provost marshal is head of the provost service He is responsible for the organization efficiency and general distribution of the military police

In India the provost service is organized as follows —

(i) Provost troops—for employment with cavalry brigades
(ii) Provost companies—for employment with divisions and armies.

Provost squadrons and provost companies (divisional and non-divisional) are allotted to divisions and higher formations as laid down in War Establishments.

2. The above units are under the orders of assistant provost marshals, who receive their instructions through the A G s staff of the formation to which they are attached The legal status of provost officers is governed by the Army Act Section 74 Where no provost officer is appointed or where the personnel of the military police are attached to formations, they are under the orders of an officer of the A G s Branch.

3 The principal duties of the provost service are,—

57 OFFICE WORK.

GENERAL RULES

1 Office work in the field is to be restricted to what is absolutely indispensable no office work will be transacted with a unit on service in that can possibly be dealt with at a stationary office

2 Equipment accounts will not be kept by units

Field return, officers (A F W 3008) Field return, other ranks (A F W 3007 series)	Weekly on Sunday, made up to and for the previous day.
Casualty return, officers (A F W 3010) Casualty return, other ranks (A F W. 3011)	Daily or as often as practicable

7 The senior staff officer of each branch is responsible for the custody of

as follows —

i To relieve all units and formations in the field of the routine work regarding the strength and record of their personnel which is

ii

iii

iv

v

vi

vii

viii

dead

ix Custody and transmission of war diaries and other documents of an historical nature

10 The D A G, 2nd echelon, will maintain on the duplicate A F. B (for British officers) and on A F B 103 (for British other ranks) and on I A F, 938 (for Indian ranks and followers) a record of service for each officer, other rank and follower of the force and also on a similar form for any enrolled civilian labourer etc who is not employed and paid locally as a casual labourer

11 The D A G, 2nd echelon corresponds direct with the headquarters of formations on all matters with which they are mutually concerned and with Os C units in the field on questions regarding the records or whereabouts of

officers and other ranks The D A G , 2nd echelon acts as the channel of correspondence between units in the field and branches of the G H Q (for officers) and officers in charge records (for other ranks)

War Diaries

12 A war diary is a secret document Its objects are —

i. To furnish a historical record of operations
ii. To provide data on which to base future improvements in army training equipment, organization and administration

It will be entered up daily each entry initialled by the officer detailed to keep it, on A F C. 2118 It is to be noted that the extraction and retention of appendices, maps etc , from a war diary is an offence under the Official Secrets Acts.

13 A war diary will be kept in triplicate from the first day of mobilization or creation of the particular command or appointment by ,—

i. Each branch of the staff in the headquarters of a formation, a subordinate command and area or sub-area on the L of C
ii Unit commanders
iii. Commanders of detachments of a unit
iv D A. G., 2nd echelon, officers holding technical appointments and personal staff
v Base, auxiliary and advanced depot commanders
vi Heads of services and their representatives controller of salvage and his representatives.

14 In so far as they are applicable the following points should be recorded when preparing a diary ,—

i. Important orders, instructions reports messages or despatches received and issued, and decisions taken

[illegible]

or quarters occupied.

vi. Changes in establishment or [illegible]

[illegible]

15 Appendices as under will be attached to the original copy of each war diary —

i. A copy of each field return (A F. W 3008 and A F W 3009) and of each operation or routine order or instruction issued during the [illegible]

(b) At G H Q, 2nd echelon, these will be sorted and arranged by formations and sent (i) one copy to the C G S at G H Q, India, (ii) the other to the War Office

(c) The triplicate copy, clearly marked as such, will be submitted as follows —

POSTAL CORRESPONDENCE

17 Private postal correspondence of officers, soldiers, foreign attaches, and civilians employed by or accompanying the army is permitted by means of—

i Printed postcards (A F A 2042)
ii Ordinary postcards
iii Letters (unregistered) in the green envelope (A F. W. 3078).
iv Letters (registered or unregistered) in ordinary envelopes
v Parcels, including photographs and sketches, or private diaries.

All such correspondence, after censorship, must be posted in boxes or offices controlled by the army postal service The posting of such correspondence in civil post offices is forbidden

18 Correspondence carried out under para 17, ii iii, iv and v is liable to delay in transmission owing to the necessity for censorship All ranks should *therefore in their own interests, employ the printed postcards as*

21 In no circumstances is specific reference to be made on postcards in letters on matter posted in parcels, or in private diaries sent from the threatre of operations, to the place from which they are written or despatched, to plans of future operations, whether rumoured, surmised or known, to organization numbers and movements of troops, to the armament of

CHAPTER XIV

58. AFGHANISTAN.

1 Afghanistan has an area of approximately 215 000 square miles, and [illegible]

i. *Mountains* [illegible]

ii. *Deserts.*

From the South-west corner of Afghanistan as far as Nushki the Baluchistan frontier is separated from the Helmand Valley by an almost waterless desert.

On the western frontier a desert extends North of Seistan for about 200 miles.

iii. *Rivers.*

Practically all the rivers are snow fed and are usually in flood from April [illegible]

The diseases to which foreign troops are liable, are those of the liver and bowels throughout the year, but especially diarrhœa from excessive fruit-eating in summer and autumn; pulmonary diseases in spring and winter, and malaria in the autumn Cholera epidemics occur frequently

3 *Cultivation.*—Only about 1 per cent. of the total area is normally cultivated

4 *Water supply.*—Rainfall averages only 11 inches per annum, but snow [illegible] a large proportion of the country [illegible]

5 *Flora and fauna* [illegible]

6 *Towns*—The five chief towns are—

Kabul the capital 210 miles from Peshawar
Kandahar, 145 miles north west of Quetta.
Ghazni, on the Kabul Kandahar road, 91 miles from Kabul.
Herat in the north west, the main commercial town, 70 miles from the Russian rail head of Kushk Post.
Mazar-i-Sharif in the north, 35 miles from the Russian rail head of Termez on the Oxus

COMMUNICATIONS

7 *Railways*—There are no railways in Afghanistan. The nearest rail heads are Kushk Post and Termez on the Northern frontier, and Chaman and Landi Khana on the Southern

8 *Roads*—There are two main routes into Afghanistan from the North

I Kushk Post—Herat—Kandahar or Kabul.
II Termez—Kabul, crossing the Hindu Kush by one of three groups of passes.

From the West (Persia) there is a main road connecting Meshed with [illegible] at [illegible]

I. *Landi Kotal—Kabul.*

From	To	No of stages	Miles.
Landi Kotal	Lol—Dakka	1	12
Lol—Dakka	Jalalabad	4	39½
Jalalabad	Nimla	2	27½
Nimla	Jagdalak	2	35
Jagdalak	Kabul	5	66
		14	180

II. *Chaman to Kandahar viâ Mel Karz.*

From	To	No of stages	Miles.
New Chaman	Mel Karez	2	23½
Mel Karez	Abdur Rahman	1	14
Abdur Rahman	Kandahar	2	24½
		6	67½

iii. *Chaman to Kandahar via Barghana Pass.*

From	To	No. of stages.	Miles.
New Chaman	Saladan	2	23
Saladan	Nao Deh	3	33½
Nao Deh	Kandahar	2	18½
		7	75

iv. *Kabul to Kandahar.*

From	To	No. of stages.	Miles.
Kabul	Ghazni	7	91
Ghazni	Shahjui	7	94
Shahjui	Kalat-i-Ghilzai	3	44
Kalat-i-Ghilzai	Kandahar	6	81½
		23	310½

10 *Population.*—About 7 millions but no census has ever been taken. The population consists of many tribes of which only half are true Afghan consequently the Afghan nation is not homogeneous in race. Although Mohammedans by religion they are divided into two sects Shiah and Sunni, between which there is frequent friction. Nevertheless at the call of a Jehad or religious war differences are forgotten.

The main true Afghan tribes which speak Pushtu (although Persian is the Court language) are the Duranis Ghilzais and Pathans. These inhabit the South and South-East of Afghanistan.

11 *Characteristics.*—The Afghan is intensely patriotic and is comparable to the Pathan tribes in character.

He deeply resents the intrusion of a foreigner and this more than anything else will tend to make him drop internal dissension and combine against the outsider.

12 *Army and Air Force.*—The Regular Army consists in peace of approximately 45,000 men and reorganization on modern lines is undertaken spasmodically. The efficiency of this Army is low and it is in her warlike tribesmen that her real strength of Afghanistan lies.

These tribes readily assemble on the threat of a foreign invasion they possess a proportion of modern rifles and being unhampered by the impedimenta of a mixed regular army and being individually hardy and mobile are formidable foes.

Afghanistan possesses a small Air Force of little value.

59. THE NORTH WEST FRONTIER OF INDIA.

1. This frontier is shown on the sketch map.—The dotted line is the dividing India and Afghanistan and is known as the "Durand" line. It runs through mountainous country practically throughout its length. From the most northerly point of this frontier at the junction of Afghan Wakhan Chinese Turkistan and Gilgit as far south as the Khyber Pass there are no transfrontier communications suitable for the passage of forces of any size.—This sector is very mountainous and traversed by passes which are little more than mule tracks.

2. There are five main lines of communication between India and Afghanistan which are dealt with in detail below (see "communications").

They are the Khyber Pass the valleys of the Kurram Tochi rivers and the Quetta—Kandahar route.

3. On the Indian side of the Durand line north of the C[illegible] is an almost

territory, which is inhabited by Pathan tribes There is thus a second line, known as the "Administrative" Border which marks the limit of complete control by the Government of India.

The Pathans

4 Generally speaking, the tribes north of the Swat river owe nominal allegiance to their local chieftains The most intractable are those inhabiting the country between the Swat and Gomal rivers, and include the Bajauris Mohmands Afridis Mahsuds and Waziris

5 The poverty of the country drives the inhabitants to raid their neighbours and the Pathans, bred in an atmosphere of robbery and blood feuds, are intensely independent and jealous of intrusion into their country.

They are active hardy and skilled marksmen, adept in all the arts of individual warfare always seeking and seldom missing an opportunity

As a rule they neither give nor expect quarter, and a wounded Pathan should always be regarded with suspicion, and precautions taken against possible treachery

6 Their armament at present consists of rifles, including a considerable

10 They have no settled form of government and no capital. The more fertile valleys usually contain collections of villages which form possible objectives of varying importance

General Topographical Features

11 The country consists generally of a succession of mountain ranges

The country as a whole is sterile and the climate rigorous, with extremes of heat and cold.

Water is scarce except in the main valleys

Sudden and dangerous spates are liable to occur after heavy rain.

12 Except for a limited and precarious supply of straw (Bhoosa), firewood and meat, local resources are practically *nil*, and all supplies have to be carried.

13. North West Frontier—Armed Force Under Civil Control

Corps.	Headquarters	Area
Chitral Scouts*	Chitral	Chitral
Chitral Levies	Chitral	Chitral
Dir Levies	Dir	Dir
Swat Levies	Malakand	Swat
Kurram Militia*	Parachinar	Kurram Valley
Tochi Scouts*	Miranshah	North Waziristan
South Waziristan Scouts*	Jandola	South Waziristan
Zhob Militia*	Fort Sandeman	Zhob
Chagai Levy Corps	Quetta	Nushki Railway
Mekran Levy Corps*	Punjgur	South West Baluchistan
Frontier Constabulary*	Oghi	Hazara
	Shabkadr	Mohmand Border
	Peshawar	Peshawar
	Hangu	Kohat
	Bannu	Bannu
	Tank	Northern Dera Ismail Khan District
	Drazinda	Southern Dera Ismail Khan District

Note —In addition there are village "Chighas and Khassadars.
* Have a staff of British Officers

14 Main Communications—India Afghanistan

I Peshawar to frontier via Jamrud

From	To	Means of communication	Miles	Remarks
Peshawar	Jamrud	Rail (Broad gauge) or motor road	9	
Jamrud	Ali Masjid	Ditto	9½	
Ali Masjid	Landi Kotal	Ditto	10	
Landi Kotal	Landi Khana	Ditto	4	
			32½	

II. Kohat to frontier via Parachinar (a)

From	To	Means of communication.	Miles	Remarks
Kohat	Thal	Narrow gauge Railway or motor road	60	
Thal	Parachinar	Motor road	57	5 march stages
Parachinar	Teri Mangal	Ditto	13	Pass 8 531 ft
Teri Mangal	Peiwar Kotal	Camel road	2	
			132	

(a) This route leads to Kabul over the Shutargardan Pass.

iii *Bannu to frontier via Tochi river (b)*

From	To	Means of communication.	Miles	Remarks
Bannu	Idak	Motor road	27	2 march stages.
Idak	Datta Khel	Ditto	37	3 march stages.
Datta Khel	Sheranni	Camel Track	8	
Sheranni	Dwa Toi	Ditto	7	
Dwa Toi	Frontier	Ditto	7	
			86	

(b) This route leads to Ghazni over the Kotanni Pass

iv *Tank to frontier via Gomal river (c)*

From	To	Means of communication	Miles	Remarks
Tank	Manzai	Narrow gauge railway or motor road	23	
Manzai	Jandola	Motor Road	10	
Jandola	Gul Kach	Ditto	63	
Gul Kach	Domandi	Camel Road	10	
			105	

(c) This route leads to Ghazni over the Staghai and Sarwandi Passes

v *Tank to frontier via Wana (d)*

From	To	Means of communication.	Miles	Remarks
Tank	Manzai	Narrow gauge railway or motor road.	22	
Manzai	Wana	Motor road	63	
Wana	Oba Sar	Camel road	22	
			107	

(d) This route leads to Katawaz

vi. *Sibi to Chaman.*

(a) By Rail

From	To	Miles	Remarks
Sibi	Bostan	108	*Via* Quetta and Bolan Pass
Sibi	Bostan	134	*Via* Harnai.
Bostan	Chaman	63	*Via* Khojak tunnel

vi. *Sibi to Chaman*—contd

(b) By Road.

From	To	Stages.	Miles	Remarks.
Sibi	Quetta	9	102	Metalled road.
Quetta	Yaru	2	25	
Yaru	Old Chaman	3	19	Cross Khojak Pass (6 380 ft.).
Old Chaman	Chaman	1	7	
		15	153	

15 Main Lateral Communications, N W Frontier.

1 *Nowshera to Chakdara* (a)

From	To	Means of communication.	Miles	No of stages	Remarks.
Nowshera	Mardan	Motor road or	16	1	
Mardan	Dargai	Broad gauge railway	26	2	
Dargai	Chakdara	Motor Road	20	2	Cross Malakand Pass, 2,900 ft. and Swat River
			61	5	

(a) This route leads to Dir and Chitral over the Lowarai Pass

v *Tank to frontier via Wana (d)*

From	To	Means of communication.	Miles	Remarks
Tank	Manzai	Narrow gauge railway or motor road	22	
Manzai	Wana	Motor road	63	
Wana	Oba Sar	Camel road	22	
			107	

(d) This route leads to Katawaz

vi. *Sibi to Chaman.*

(a) By Rail.

From	To	Miles.	Remarks
Sibi	Bostan	108	*Via* Quetta and Bolan Pass
Sibi	Bostan	134	*Via* Harnai.
Bostan	Chaman	69	*Via* Khojak tunnel

vi *Sibi to Chaman*—contd.

(b) By Road.

From	To	Stages.	Miles	Remarks
Sibi Quetta Yaru Old Chaman	Quetta Yaru O d Chaman Chaman	9 2 3 1	102 25 19 7	Metalled road Cross Khojak Pass (6 280 ft.).
		15	153	

15 Main Lateral Communications N W Frontier.

i. *Nowshera to Chakdara* (a)

From	To	Means of communication.	Miles	No of stages	Remarks
Nowshera Mardan Dargai	Mardan Dargai Chakdara	Motor road or Broad gauge railway Motor Road	16 25 20	1 2 2	Cross Malakand Pass 2,900 ft. and Swat River
			61	5	

(a) This route leads to Dir and Chitral over the Lowarai Pass.

ii *Peshawar to Dera Ismail Khan*

From	To	Means of communication	Miles	No of stages.	Remarks
Peshawar	Kohat	Motor road	40	3	Cross Kohat Pass (2,866 ft)
Kohat	Latambar	D tto	60	5	
Latambar	Bannu	Ditto	19	1	
Bannu	Damdila	Narrow gauge railway or metalled road (a)	25	2	(a) Fit for occasional M T
Damdila	Peza	Metalled road (a)	27	2	
Peza	D I. K	Ditto (a)	36	4	
			207	17	

iii *Idak to Kour*

From	To	Means of communication	Miles	No of stages	Remarks
Idak	Thal	Motor road	10	1	Cross *Tochi river*
Thal	Razani	Ditto	24	2	Cross Damdil Pass (4 031 ft)
Razani	Razmak	Ditto	12	1	Cross Razmak Pass (7 150 ft)
Razmak	Piazha Raghza	I tto	11	1	
P Raghza	Sorarogha	Di to	10	1	
Sorarogha	Jandola	I tto	18	2	
Jandola	Kaur	Ditto	21	3	
			106	11	

iv *Wana to Fort Sandeman (via Gul Kach)*

From	To	Means of communication	Miles	No of stages	Remarks
Wana anai ul Kach	Tanai Gul Kach Fort Sandeman	Motor Road Ditto Ditto	13 25 56	1 2 4	
			94	7	

v *Quetta to Khajuri Kach (via Hindubagh and Fort Sandeman)*

From	To	Means of communication	Miles	No of stages	Remarks
uetta	Khanai	Cart road (a) or broad gauge railway	30	2	(a) Occasional M T
hanai	Hindubagh	Cart road (a) or narrow gauge railway	44	3	
Hindubagh	Kila Saifulla	Cart road (a) or narrow gauge rai way	40	2	
lla Saifulla	Tang Haidarzai	Cart road (a) or narrow gauge ra lway	45	4	
Haidarzai	Ft Sandeman	Cart road (a) or narrow gauge railway	47	4	
Sandeman	Khajuri Kach	Camel road	70	6	
			278	21	

vi. *Quetta to Fort Sandeman* (via *Loralai*)

From	To	Means of communication. (a)	Miles	No of stages	REMARKS
Quetta	Kach Post	Partially metalled road, fit for occasional M. T	30	2	
Kach Post	Loralai	Ditto	91	5	Harnai Loralai road is joined at Smallan
Loralai	Murgha Kibzai	Ditto	58	4	
M. Kibzai	Lakabane	Ditto	22	2	
Lakaband	Fort Sandeman	Ditto	33	2	
			234	15	

(a) There is also a narrow gauge Railway connecting Quetta and Fort Sandeman *via* Kila Saifulla.

vi. Quetta to *Fort Sandeman* (via *Loralai*)

From	To	Means of communication (a)	Miles	No of stages	REMARKS
Quetta . .	Kach Post .	Partially metalled road, fit for occasional M. T	30	2	
Kach Post .	Loralai . .	Ditto	91	5	Harnai Loralai road is joined at Smallan.
Loralai	Murgha Kibzai	Ditto	[illegible]		
M. Kibzai	Lakabane	Ditto	53	4	
Lakaband	Fort Sandeman	Ditto	22	2	
			33	2	
			234	15	

(a) There is also a narrow gauge Railway connecting Quetta and Fort Sandeman *via* Kila Saifulla.

60 THE NORTHERN FRONTIER OF INDIA

Starting at the point where Afghanistan, Soviet Turkestan, Sinkiang (Chinese Turkestan [illegible]

61 THE NORTH EASTERN FRONTIER OF INDIA.

1 That [illegible]

tions—

(i) From the eastern boundary of Bhutan to the 26th parallel
(ii) From the 26th parallel to the 24th parallel, and
(iii) From the 24th parallel to the frontier with French Indo-China

Of these, (i) consists of a jungle-covered mountainous region inhabited by various tribes either under a loose form of administration or not ad- [illegible]

5 *Frontier Races* —The principal are— [illegible]

Shans (Tai) in Hkamti Long and the Shan States
Nungs in north of lat. 27° 30′

The Kachins Marus and Lashis are warlike and adepts at jungle fighting both they and the Lisns (a superior race physically) are enlisted in the Burma Rifles The Shans are more civilised and of a peaceful disposition, though given to intrigue they are not now enlisted. The Yangs are wild hillmen.

In the east of the Shan States live the Was, "tame" and "wild", of the latter little is known South of the [illegible] an States lies the state of Karenni inhab[illegible]

[illegible] ng sword, but guns also are [illegible] The wilder tribes also use

7 Communications Burma and Frontier

1 *Rangoon to Myitkyina*

From	To	Means of communication	Miles	Remarks
Rangoon	Mandalay	By rail and river (Motor road in course of construction not yet completed)	385 (Approx)	
Mandalay	Kawlin	Rail (no details of road available)	15[illegible]	
Kawlin	Naba	Unmetalled cart road (*a*) or rail	1[illegible]	10 stages (*a*) Impassable for carts after heavy rains
Naba	Myitkyina	Rail and river (*b*) (No definite road existing at present)	1[illegible]0 (Approx)	(*b*) Not possible during high water
			[illegible]60 (Approx)	

ii *Mandalay to Tali Fu via Kunlong Ferry*

From	To	Means of communication.	Miles.	No of stages	REMARKS
Mandalay	Maymyo	Motor road or rail	41	4	
Maymyo	Nawngkkio	Unmetalled road or rail	34	3	
Nawngkkio	Hsipaw	Ditto	53	5	Notoriously unhealthy
Hsipaw	Lashio	Ditto	46	4	
Lashio	Mongyaw	Mule road	35	3	
Mongyaw	Kunlong Ferry	Ditto	58	5	Road fit for pack transport only
Kunlong Ferry	Meng Chein	Ditto			
Meng Chien	Meng Yang	Ditto			
Meng Yang	Latien po	Ditto	200	21	Road fit for pack transport only
Latien po	Shun ningfu	Ditto			Ditto
Shun ningfu	Hsi hsinchen	Ditto			Cross Yang pi Ho 130 yds wide by raft
Hsi hsinchen	Tali fu	Ditto			A good mule road
			527	48	

iii. *Naba to Tengyueh* (via *Bhamo*)

From	To	Means of communication	Miles	REMARKS
Naba	Bhamo	By rail to Katha thence by river to Bhamo	60	No direct road route.
Bhamo	Hkalung Hka	Metalled cart road for first 18 m		
Hkalung Hka	Manhsien	Unmetalled		
Manhsien	Kanai	Ditto	137	9 stages
Kanai	Tengyueh	Ditto		
			197	

iv *Myitkyina to Tengyueh*

From	To	Means of communication	Miles	REMARKS
Myitkyina	Sadon Fort	Unmetalled road	11	4 stages (bilk for wheeled transport in dry season only)
Sadon Fort	Niu Chuaunho	Mule road	31	4 stages
Niu Chuaunho	Tengyueh	Ditto	3[illegible]	3 stages
			111	

v *Bhamo to Lashio*

From	To	Means of communication	Miles	No of stages	REMARKS
Bhamo	Mansi	Unmetalled road	13	1	Important trade route — suitable for wheeled traffic.
Mansi	Kaihtek Saddle	Ditto	28	1	
Kaitek Saddle	Namhkam	Ditto	9	[illegible]	
Namhkam	Pangnim	Ditto	31	[illegible]	
Pangnim	Hsenwi	Ditto	23	[illegible]	
Hsenwi	Lashio	Ditto	3[illegible]	3	
			156	11	

vi *Tengyueh to Yunnan Fu* (a)

From	To	Means of communication	Miles	No. of stages	REMARKS
Tengyueh	Luchang Chiao	Mule road	31	4	Part of main Yunnan Route (indifferent mule road)
Luchang Chiao	Ta li-chao	Ditto	43	7	
Ta li-chao	Sha Sung Shao	Ditto	33	4	
Sha Sung Shao	Yang Pi	Ditto	30	4	
Yang Pi	Tali Fu	Ditto	35	3	
Tali Fu	Hung ai	Ditto	32	3	One of the most important trade routes in Yunnan a well paved and good mule road
Hung ai	Pu peng	Ditto	34	4	
Pu peng	Chen nang	Ditto	30	3	
Chen nan	Hsiao-Yao Chan	Ditto	31	4	
Hsiao-Yao Chan	Hsiang-shui kuan	Ditto	31	3	
Hsiang-shui kuan	Lu piao-kai	Ditto	32	3	
Lu piao-kai	Yunnan Fu	Ditto	33	3	
			400	36	

(a) An alternative route missing Tali Fu (Yang Pi to Chaochia) is 375 miles and 30 stages

APPENDIX I

ABBREVIATED TITLES, ADDRESSES, DISTINGUISHING LETTERS AND OTHER ABBREVIATIONS

For use in the field and during training

Note.—Officers are not expected to memorize all the following abbreviations Many of them will be used only by special or technical services and units

Abbreviations other than those in this list will be used only when no abbreviation is authorized and when the writer is satisfied that there is no possibility of the addressee mistaking the meaning of the abbreviation

The writer of an order report etc must exercise judgment in the employment of abbreviations and must not use those with which the addressee is unlikely to be familiar

I HEADQUARTERS FORMATIONS ETC

Full title (1)	Abbreviations.* (2)
General Headquarters	G H Q
First (Second etc) Army	First (Second etc) Army
1st nd etc Cavalry Corps	1 (etc) Cav Corps.
1st nd etc Corps	1 (etc) Corps
1st (2nd etc) Cavalry Division	1 (etc) Cav Div
1st (2nd etc) Division	1 (2 etc) Div
1st (nd etc) Cavalry Brigade	1 (2 etc) Cav Bde
1st (nd etc) Infantry Brigade	1 (2 etc) Inf Bde
Operations headquarters of formations	Ops G H Q (First Army 1 Corps 1 Div)
Royal Artillery —	
1st (2nd etc) Corps Artillery	R A 1 (2 etc) Corps
1st (2nd etc) Corps Medium Artillery	M A 1 (2 etc) Corps.
1st (2nd etc) Divisional Artillery	R A 1 (2 etc) Div
1st (2nd etc) Brigade R H.A	1 (2 etc) Bde R H.A.
1st (nd etc) Light Brigade R A	1 (2 etc) Lt Bde
1st (2nd etc) Field Brigade R A	1 (2 etc) Fd. Bde
1st (2nd etc) Army Field Brigade R A	1 (2 etc) A Fd Bde.
1st (2nd etc) Medium Brigade R A	1 (2 etc) Med Bde.
1st (2nd etc) Heavy Brigade R A	1 (2 etc) Hy Bde.
1st (nd etc) Anti Aircraft Brigade R A	1 (2 etc) A.A Bde.
Royal Engineers	
1st (2nd etc) Divisional Engineers	R E 1 (2 etc) Div
Royal Corps of Signals —	
General Headquarters Signals	Sigs G H Q
First (Second etc) Army Signals	Sigs First (Second etc Army
1st (2nd etc) Corps Signals	Sigs 1 (2 etc) Corps
1st (2nd etc) Cavalry Divisional Signals	Sigs 1 (2 etc) Cav Div
1st (nd, etc) Divisional Signals	Sigs 1 (2 etc) Div
Air Defence —	
[illegible]	[illegible] A D Bde
[illegible]	(etc) Div
[illegible]	

* When it is desired to refer specifically in the text of an order or message to the H Q of a unit or formation the abbreviation will be preceded by the letters H Q e g., "H Q 1 Inf Bde

2 COMMANDERS, STAFF, APPOINTMENTS AND SERVICES.

Full title 1	Abbreviated title 2	Distinguishing letter to be used with originator's number or as abbreviation for use in the address *To* and *From* in addressing correspondence and signal messages [*See note (a)*] 3
Chief of the Imperial General Staff at the War Office	C I G S	
Commander in Chief	C in C	
General Staff Branch—		
Operations Section	—	G
Intelligence Section	—	O
Staff Duties and Training Section	—	I
Chief of the General Staff in the Field	C G S	SD (*at GHQ only*)
Deputy Chief of the General Staff	D C G S	
Major General General Staff	M G G S	
Brigadier General Staff	B G S	
General Staff Officer	G S O	
Brigade Major	B M	O
Adjutant General's Branch		
Deputy Adjutant General	D A G	A
Officer in Charge 2nd Echelon	O 2 E	LCH
Assistant Adjutant General	A A G	
Deputy Assistant Adjutant General	D A A G	
Staff Captain	S C	
Quarter Master General's Branch—		
Maintenance Section	—	Q
Movement Section	—	Q
Deputy Quarter Master-General	D Q M G	QM
Assistant Quarter Master General	A Q M G	
Staff Captain	S C	
Deputy Assistant Quarter Master General	D A Q M G	
Deputy Adjutant and Quarter Master General	D A and Q M G	
Assistant Adjutant and Quarter Master General	A A and Q M G	
Deputy Assistant Adjutant and Quarter Master General	D A A and Q M G	

2 COMMANDERS STAFF, APPOINTMENTS AND SERVICES—*continued*

Full title 1	Abbreviated title 2	Distinguishing letter to be used with originator's number or an abbreviation for use in the address *To* and *From* in addressing correspondence and signal messages [*See note (a)*] 3
Branch of the Master General of the Ordnance—		MGO
Deputy Master General of the Ordnance	D M G O	
Assistant Master General of the Ordnance	A M G O	
Deputy Assistant Master General of the Ordnance	D A M G O	
Staff Captain	S C	
Officers holding miscellaneous appointments at a head-quarters—		
Major General Royal Artillery	M G R A	[*See note (b)*]
Commander Corps Royal Artillery	C C R A	[*See note (b)*]
Director General Engineer Service	D G E S	RE
Chief Engineer	C E	RE
Signal Officer in Chief	S O in C	X
Chief Signal Officer	C S O	X
Military Secretary	M S	MS
Deputy Judge Advocate General	D J A G	JAG
Naval Staff Officer	N S O	
Principal Sea Transport Officer	P S T O	
Air Officer Commanding	A O C	
Advisers to the D M G O—		
Director of Artillery	D of A	MGO
Director of Mechanization	D of M	MGO
Subordinate Commanders—		
Commander Corps Medium Artillery	C C M A	[*See note (b)*]
Commander Royal Artillery	C R A	[*See note (b)*]
Commander, Royal Engineers	C R E	RE
Officer Commanding Signals	—	Sigs
Commander Royal Army Service Corps	C R A S C	ST
Officers holding appointments for local administration of a head quarters—		
Camp Commandant	—	CP
Officers of the services assisting the Camp Commandant	—	No authorized abbreviation; abbreviated form of the service will [illegible]
Personal appointments—		
Aides de-Camp	A D C	A D C
Personal Assistant	P A	

2 COMMANDERS STAFF, APPOINTMENTS AND SERVICES—*concluded.*

Full title 1	Abbreviated title 2	Distinguishing letter to be used with originator's number or as abbreviation for use in the address *To* and *From* in addressing correspondence and signal messages [*See note (a)*] 3
Heads of services and their representatives—		
Chaplains	Chaplains	CH
Canteen	*Canteens*	CAN
Engineer stores	Restores	ES
Graves	Graves	GR
Hirings	Hirings	HGS
Labour	Labour	LB
Medical	Medical	M
(i) Medical and Surgical	Medical	M
(ii) Hygiene	*Hygiene*	*M*
(iii) Pathology	Pathology	M
(iv) Dental Surgery	Dental	M
(v) Nursing	Nursing	M
Ordnance	Ordnance	OS
Pay	Pay	PAY
Postal	Postal	P
Printing and stationery	*Print*	*PS*
Provost	Provost	PRO
Remount	*Remounts*	*RM*
Supply	Supplies	S [*See note (d)*]
Survey	Survey	SV
Transport	Transport	T [*See note (d)*]
Transportation	Transit	TN
(i) Docks	Docks	D
(ii) Inland Water Transport	I W T	IW
(iii) Railways	Rail	RY
(iv) Light Railways	Lightrail	LR
Veterinary	Vet	V
Works	Works	W

[illegible]

will be used

(c) Units (*e.g.*, cavalry regiments, infantry battalions, etc.) will use the distinguishing letters "O," "I" and "Q" only

(d) A.D.S. and T. of a corps will use the distinguishing letters "ST"

3 Regiments and Corps of the Regular Army.

Full title (1)	Abbreviations.* (2)
The Life Guards (1st and 2nd)	L G
Royal Horse Guards (The Blues)	R H G
1st King's Dragoon Guards	K D G
The Queen's Bays (2nd Dragoon Guards)	Bays
3rd Carabiniers (Prince of Wales's Dragoon Guards)	3 D G
4th/7th Dragoon Guards	4/7 D G
5th Inniskilling Dragoon Guards	5 Innis. D G.
1st The Royal Dragoons	Royals
The Royal Scots Greys (2nd Dragoons)	Greys
3rd The King's Own Hussars	3 H
4th Queen's Own Hussars	4 H
7th Queen's Own Hussars	7 H
8th King's Royal Irish Hussars	8 H
9th Queen's Royal Lancers	9 L
10th Royal Hussars (Prince of Wales's Own)	10 H
11th Hussars (Prince Albert's Own)	11 H
12th Royal Lancers (Prince of Wales's)	12 L
13th/18th Hussars	13/18 H
14th/20th Hussars	14/20 H
King's Royal 15th Hussars	15 H
16th/5th Lancers	16/5 L
17th/21st Lancers	17/21 L
Royal Regiment of Artillery	R A
Corps of Royal Engineers	R E
Royal Corps of Signals	R Sigs
Grenadier Guards	Gren Gds
Coldstream Guards	Coldm Gds
Scots Guards	S G
Irish Guards	I G
Welsh Guards	W G
The Royal Scots (The Royal Regiment)	R S
The Queen's Royal Regiment (West Surrey)	Queen's
[illegible]	Buffs
[illegible]	King's Own
[illegible]	N F
[illegible]	Warwick
[illegible]	R F
[illegible]	Kings
[illegible]	Norfolk
[illegible]	Lincolns
[illegible]	Devon
[illegible]	Suffolk
[illegible]	Som L I
[illegible]	W. Yorks.
[illegible]	L York
[illegible]	Bedfs Herts.
[illegible]	Leicesters
[illegible]	Green Howards.
[illegible]	L F
[illegible]	R S F
[illegible]	Cheshire
[illegible]	R W F.
[illegible]	S W B
[illegible]	K O S B
[illegible]	Cameronl
[illegible]	Innisk.
[illegible]	Glosters.
[illegible]	Worc R.

The [illegible]

3 REGIMENTS AND CORPS OF THE REGULAR ARMY—contd

Full title (1)	Abbreviations * (2)
[illegible]	E Lan R
[illegible]	Surreys
[illegible]	D C L I.
[illegible]	D W R.
The Border Regiment	Border
[illegible]	R Sussex
[illegible]	Hamps
[illegible]	S Staffords
[illegible]	Dorset
[illegible]	P W V
The Welch Regiment	Welch
The Black Watch (Royal Highlanders)	Black Watch.
The Oxfordshire and Buckinghamshire Light Infantry	Oxf Bucks
[illegible]	[illegible]
[illegible]	[illegible] tons.
[illegible]	[illegible]
The York and Lancaster Regiment	Y & L.
The Durham Light Infantry	D L.I
The Highland Light Infantry (City of Glasgow Regiment)	H L.I
The Seaforth Highlanders (Ross-shire Buffs the Duke of Albany's)	Seaforth
[illegible]	[illegible]
The Rifle Brigade (Prince Consort's Own)	R.B
[illegible]	[illegible]

4 Regiments of the Territorial Army and Militia

Units forming part of a regiment or corps of the Regular Army will adopt its abbreviated title except as given below

Abbreviations for other regiments and corps will be as follows —

Full title (1)	Abbreviations.* (2)
[illegible]	[illegible]
The Northumberland Hussars	N H
The Nottinghamshire Yeomanry (Sherwood Rangers)	Notts Y
[illegible]	Shrops Y
[illegible]	N S Y
[illegible]	Staffs Y
[illegible]	Warwick Y
[illegible] Own	Wilts Y
Th Y rk l Dragoons Queen s Own)	Yorks D
The Yorkshire Hussars (Alexandra Princess of Wales s Own	Yorks H
The Lovat Scouts	Lovat Scouts
The Scottish Horse	*Scot Horse*
Honourable Artillery Company	A Bty H A C B Bty H.A.C H.A C Inf
The Monmouthshire Regiment	Mon R
The Cambridgeshire Regiment	Camb R
1st City of London Regiment (The Royal Fusiliers)	1 London
2nd City of London Regiment (The Royal Fusiliers)	2 London
3rd City of London Regiment (The Royal Fusiliers)	3 London
4th City of London Regiment (The Royal Fusiliers)	4 London
5th City of London Regiment (London Rifle Brigade)	5 London
6th City of London Regiment (City of London Rifles)	6 London
7th City of London Regiment (Post Office Rifles)	7 London
9th London Regiment (Queen Victoria s Rifles)	9 London
[illegible]	10 London

4 REGIMENTS OF THE TERRITORIAL ARMY AND MILITIA—*contd.*

Full title (1)	Abbreviations* (2)
[illegible]	[illegible]

* See footnote on p. 202

5 EXAMPLES OF ABBREVIATED TITLES OF UNITS OTHER THAN CAVALRY AND INFANTRY

Full title. (1)	Abbreviations* (2)
R.A	
"C" Battery Royal Horse Artillery	C Bty R.H.A
97th Field Battery R.A.	97 Fd Bty
10th Field Battery R.A. (How.)	10 Fd Bty (How)
2nd Light Battery R.A	2 Lt Bty
1 th Medium Battery R.A.	1 Med Bty
4th Heavy Battery R.A.	4 Hy Bty
3rd Anti Aircraft Battery R.A.	3 A.A. Bty
Survey Company R.A.	Svy Coy R.A
R.E	
12th (Field) Company R.E	12 Fd Coy
6th (Field Park) Company R.E.	6 Fd Park Coy
3rd (Fortress) Company R.E.	3 Fort Coy
10th (Field Survey) Company R.E.	10 Fd Svy Coy R.E.
Anti Aircraft Searchlight Battalion, R.E.	A.A.S.L. Bn
Electrical and Mechanical Company R.E.	E. & M. Coy
100th (Army Troops) Company R.E	100 (", etc.) A Tps. Coy
R. Signals	
No. 1 (No. 2 etc.) Field Army Signal Section	1 (", etc.) Fd. Army Sig. Sect
No. 1 (No. 2 etc.) Medium Army Signal Section	1 (", etc.) Med. Army Sig. Sect
No. 1 Anti Aircraft Signal Company	1 A.A. Sig Coy
No. 1 Air Defence Brigade Signals	1 A.D. Bde Sigs
R. Tanks	
3rd Battalion Royal Tank Corps	3 R. Tanks
1st Armoured Car Company	1 Armd. C. Coy
R. [illegible]	
4th (H.Q.) Troops Maintenance Company	4 H.Q. Maint. Coy
1st (etc.) Infantry Troops Maintenance Company	1 (etc.) I.T. Maint. Coy
1st (etc.) Infantry Troops Ammunition Company	1 (etc.) I.T. Amm. Coy
1st (etc.) Infantry Troops Baggage Company	1 (etc.) I.T. Bag. Coy
1st (etc.) Infantry Troops Supply Company	1 (etc.) I.T. Sup. Coy
1st (etc.) Cavalry Maintenance Company	1 (etc.) Cav. Maint. Coy
1st (etc.) Cavalry Division Ammunition Column	1 (etc.) Cav. Div. Amm. Col

5 EXAMPLES OF ABBREVIATED TITLES OF UNITS OTHER THAN CAVALRY AND INFANTRY—*contd*

Full title (1)	Abbreviations * (2)
1st (etc.) Cavalry Divisional Baggage Company	1 (etc.) Cav Div Bag Coy
1st (etc.) Cavalry Divisional Supply Company	1 (etc.) Cav Div Sup Coy
Maintenance Company for 1st (etc.) Division	Maint Coy 1 (etc.) Div
1st (etc.) Divisional Ammunition Company	1 (etc.) Div Amn Coy
1st (etc.) Divisional Baggage Company	1 (etc.) Div Bag Coy
1st (etc.) Divisional Supply Company	1 (etc.) Div Sup Coy
Reserve M. T. Company	Res M.T Coy
Motor Ambulance Convoy	M A C
Pontoon Bridge Park	P B Park
Vehicle Reception Depot	V R Depot
P A M C	
Field Ambulance	1 (2 etc.) Fd Amb
Cavalry Field Ambulance	1 (2 etc.) Cav Fd Amb
Field Hygiene Section	1 (2 etc.) F H Hyg Sec
Casualty Clearing Station	1 (2 etc.) C C S
General Hospital	1 (2 etc.) Gen Hosp
P A O C	
G H Q Ordnance Workshop	G H Q Ord Wkshop
Corps Ordnance Workshop	Ord Wkshop 1 (2, etc.) Corps
Divisional Ordnance Workshop	Ord. Wkshop 1 (2 etc.) Div
Ordnance Ammunition Company	Ord Amn Coy
Ordnance Field Park	Ord. Fd Park
Veterinary	
Mobile Veterinary Section	1 (2 etc.) Mob Vet Sec
Veterinary Evacuating Station	1 (2 etc.) V E S
Provost	
Provost Company	1 (2 etc.) Pro Coy
Provost Squadron	1 (2 etc.) Pro Squ.

* See footnote on p. 292

6 INDIAN SERVICE

NOTES.—(a) In the case of units and formations called out on internal security duties and in all cases when messages are sent through civil telegraph offices the telegraphic address given in the Indian Army List will be used.

(b) Abbreviated titles and other abbreviations applicable to both British and Indian service will be the same as those authorised for the British service.

7 HEADQUARTERS FORMATIONS, ETC.

Full title (1)	Abbreviations * (2)
1st (2nd etc.) Indian Corps	1 (2, etc.) Ind Corps
1st (2nd etc.) Indian Cavalry Division	1 (2 etc.) Ind Cav Div
1st (2nd etc.) Indian Division	1 (2 etc.) Ind Div
1st (2nd etc.) Indian Cavalry Brigade	1 (2 etc.) Ind Cav Bde

4. REGIMENTS OF THE TERRITORIAL ARMY AND MILITIA—*contd.*

Full title (1)	Abbreviations* (2)
[illegible]	22 London.
[illegible]	23 London.
[illegible]	24 London
[illegible]	24 London
[illegible]	Herts R.
[illegible]	Hereford R
[illegible]	Bucks.
[illegible]	Hallams

* See [illegible]

5. EXAMPLES OF ABBREVIATIONS OF UNITS OTHER THAN CAVALRY AND INFANTRY

[illegible]	Abbreviations* (2)
[illegible]	[illegible] Bty R H.A
[illegible] Field Battery R A	9th Fd. Bty
[illegible] Field Battery R A (H)	10 Fd Bty (H)
[illegible] Battery R A	2 Lt Bty
[illegible] Medium Battery R A	17 Med Bty
[illegible] Heavy Battery R A	4 Hy Bty
[illegible] Anti Aircraft Battery R A	3 A A Bty
Survey Company R A	Svy Coy R A
R.E.	
12th (Field) Company R E	12 Fd Coy
6th (Field Park) Company R E	6 Fd Park Coy
3rd (Fortress) Company, R E	3 Frt. Coy
19th (Field Survey) Company, R E	19 Fd. Svy Coy R E
Anti Aircraft Searchlight Battalion, R E	A A S.L. Bn
Electrical and Mechanical Company, R E	E. & M Coy
[illegible] (Army Troops) Company, R E	[illegible] (101, etc.) A Tps Coy
R. Signals	
No 1 (No 2, etc.) Field [illegible] Signal Section	1 (2, etc.) Fd Arty Sig
No 1 (No 2, etc.) Medium [illegible] Signal Section	1 (2, etc.) Med. Arty Sig
No 1 Anti Aircraft Signal Company	1 A A Sig Coy
No 1 Air Defence Brigade Signals	1 A D Bde Sigs
R. Tanks	
No 1 Battalion Royal Tank Corps	3 R. Tanks.
1st Armoured Car Company	1 Armd C. Coy
R. [illegible]	
[illegible] Troops Maintenance Company	Q.M.G. Maint Coy
[illegible] Troops Maintenance Company	[illegible]

5. EXAMPLES O ABBREVIATED TITLES OF UNITS OTHER THAN CAVALRY AND INFANTRY—*contd*

Full title (1)	Abbreviations * (2)
1st (etc) Cavalry Divisional Baggage Company	1 (etc) Cav Div Bag Coy
1st (etc) Cavalry Divisional Supply Company	1 (etc) Cav Div Sup Coy
Maintenance Company for 1st (etc) Division	Maint Coy 1 (etc) Div
1st (etc) Divisional Ammunition Company	1 (etc) Div Amn Coy
1st (etc) Divisional Baggage Company	1 (etc) Div Bag Coy
1st (etc) Divisional Supply Company	1 (etc) Div Sup Coy
Reserve M. T Company	Res M.T Coy
Motor Ambulance Convoy	M A C
Pontoon Bridge Park	P B Park
Vehicle Reception Depot	V R. Depot
R.A.M C	
Field Ambulance	1 (2 etc) Fd Amb
Cavalry Field Ambulance	1 (2 etc) Cav Fd Amb
Field Hygiene Section	1 (2 etc) Fd Hyg Sec
Casualty Clearing Station	1 (2 etc) C C S
General Hospital	1 (etc) Gen Hosp
R.A O C	
G H Q Ordnance Workshop	G H Q Ord Wkshop
Corps Ordnance Workshop	Ord Wkshop 1 (2 etc) Corps
Divisional Ordnance Workshop	Ord. Wkshop 1 (2 etc) Div
Ordnance Ammunition Company	Ord Amn Coy
Ordnance Field Park	Ord. Fd Park
Veterinary	
Mobile Veterinary Section	1 (2 etc) Mob Vet Sec
Veterinary Evacuating Station	1 (etc) V E S
Provost	
Provost Company	1 (2 etc) Pro Coy
Provost Squadron	1 (2 etc) Pro Sqn.

* See footnote on p 292

6 INDIAN SERVICE

NOTES —(*a*) In the case of units and formations called out on internal security duties, and in all cases when messages are sent through civil telegraph offices the telegraphic address given in the Indian Army List will be used

(*b*) Abbreviated titles and other abbreviations applicable to both British and Indian service will be the same as those authorised for the British service

1 HEADQUARTERS FORMATIONS, ETC

Full title (1)	Abbreviations * (2)
1st (2nd etc) Indian Corps	1 (2, etc)
1st (2nd etc) Indian Cavalry Division	1 (2 etc
1st (2nd etc) Indian Division	1 (2
1st (nd etc) Indian Cavalry Brigade	1 (2

I HEADQUARTERS FORMATIONS ETC —*co td*

Full title (1)	Abbreviations * (2)
1st (2nd etc) Indian Infantry Brigade	I (° etc) Ind Inf Bde
Headquarters of Internal Security Districts and Areas	As in peace (*see* Indian Army List)
Royal Artillery—	
1st (2nd etc) Indian Corps Artillery	R A 1 (2 etc) Ind Corps
1st (2nd etc) Indian Corps Medium Artillery	M A 1 (° etc) Ind Corps
1st (2nd etc) Indian Divisional Artillery	R A 1 (2 etc) Ind Div
1st (2nd etc) Indian Mountain Artillery Brigade	1 Ind Mtn Bde
Royal Eng neers—	
1st (2nd etc) Indian Di 1 ional Enginee s	R E 1 (° etc) Ind Div
Headquarters Roj al Lng neers I eshawar District	R L 1 esl dist
Headquarters Royal Engineers I ohat District	R E Kodist
Headquarters Royal Engineers Waziristan District	R L Wazirdist
Headquarters Royal Engineers Zhob Independent Brigade Ar a	R E Zhob
Indian S gnal Corps—	
1st (2nd etc) Indian Corps S gnals	Sigs 1 (° etc) Ind Corps
1st (2nd etc) Indian Divisional Signals	S gs 1 (° etc) Ind Div
Peshawar District Signals	Sigs Peshdist
Kohat *District S gnals*	*Sigs Kodist*
Waziristan District Signals	S gs Wazirdist
Ind an Army Service Corps	
1st (nd etc) Indian Cavalry Di 1 ional I A S C	I A S C 1 (2 etc) Ind Cav Div
1st (2nd etc) Indian Divisional I A S C	I A S C 1 (2 etc) Ind Div
Ro al Air Force—	
H Q No 1 (Indian) Group Peshawar	1(1) Gp R A F
H Q No 1 (Indian) Wing Kohat	1(1) Wg R A F

II REGIMENTS AND CORPS OF THE REGULAR ARMY

NOTES —(*a*) Battalions will be denoted by the battalion number in front of the regimental abbreviation *e g* 2 Rajput In the case of Punjab and Gurkha regiments an oblique stroke will be used *e g* 2/1 Punjab 2/5 R G R

(*b*) In the case of Royal units the letter R will be inserted after the number of the unit *e g* 5/R Mahrattas

Full title (1)	Abbreviations * * (°)
Skinner s Horse (1st D Y O Cavalry)	1 Horse
n l Lancers (Gardner s Horse)	° L.
3rd Cavalry	3 Cav
Hodson s Horse (4th D C O Lancers)	*4 Horse*
I robyn s Horse (5th K E O Lancers)	5 Horse
6th D C O Lancers (Watson s Horse)	6 L
7th I ight Cavalry	7 Cav
8th K G O Light Cavalry	8 Cav

II. Regiments and Corps of the Regular Army—*contd*

Full title (1)	Abbreviations * (2)
The Royal Deccan Horse (9th Horse)	9 R Horse
The Guides Cavalry (10th Q V O I F)	Guides Cav
P A V O Cavalry (11th F F)	11 Cav
Sam Browne's Cavalry (12th F F)	12 Cav
13th D C O Lancers	13 L.
The Scinde Horse (14th P W O Cavalry)	14 Horse
15th Lancers	15 L
16th Light Cavalry	16 Cav
The Poona Horse (17th Q V O Cavalry)	17 Horse
18th K E O Cavalry	18 Cav
19th K G O Lancers	19 L.
20th Lancers	20 L.
[illegible]	C I H
[illegible]	Ind Sigs
[illegible]	1 Punjab
[illegible]	2 Punjab
[illegible]	Bombay Gre
[illegible]	Mahrattas
[illegible]	Raj Rif
[illegible]	Rajput
[illegible]	8 Punjab
[illegible]	Jat
[illegible]	Baluch
[illegible]	Sikh
[illegible]	F F R
[illegible]	F F Rif
[illegible]	14 Punjab
[illegible]	15 Punjab
[illegible]	16 Punjab
[illegible]	Dogra
[illegible]	R Garh Rif
[illegible]	Hyderabad
[illegible]	Kumaon Rif
20th Burma Rifles	Burma Rif
1st K G O Gurkha Rifles	1 G R.
2nd K E O Gurkha Rifles	2 G R
3rd Q A O Gurkha Rifles	3 G R
4th P W O Gurkha Rifles	4 G R
5th Royal Gurkha Rifles (F F)	5 R G R
6th Gurkha Rifles	6 G R
7th Gurkha Rifles	7 G R
8th Gurkha Rifles	8 G R.
9th Gurkha Rifles	9 G R
10th Gurkha Rifles	10 G R.
Indian Army Service Corps	I A S C.
Indian Medical Service	I.M.S
Indian Hospital Corps	I H C
Indian Army Veterinary Corps	I.A V C
Indian Army Ordnance Corps	I A O C.
Army Remount Department	A R D
Indian Army Corps of Clerks	I A C C

III Units of the Auxiliary Force India and the Indian A Force

The abbreviated titles of these units will be as shown in the List.

IV EXAMPLES OF ABBREVIATED TITLES (INDIAN SERVICE)

Full title (1)	Abbreviations * (2)
[illegible]	
Chitral Mountain Section R.A	Chit Mtn Sec
[illegible]	
[illegible]	
[illegible]	
1st (2nd etc) Printing Section Sappers and Miners	1 (2 etc) Ptg Sec S M
1st (2nd etc) Litho Section Sapper and Miners	1 (2 etc) Litho Sec S M
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Company	Coy
Base Engineer Park	Base Eng Park
Advanced Engineer Park	Adv Eng Park
Indian Signal Corps—	
1st (2nd etc) Indian Cavalry Brigade Signal Troop	Sigs 1 (2 etc) Ind Cav Bde
[illegible]	Coy
[illegible]	Coy
[illegible]	
No 1 (2nd etc) Animal Transport Company (Camel)	1 (2 etc) A T Coy (C).
Indian Army Ordnance Corps—	
Railhead Ammunition Depot	R Amn Depot
Advanced Base Ammunition Depot	Adv Base Amn Depot
Advanced Base Ordnance Depot	Adv Base Ord Depot
Base Ordnance Depot	Base Ord Depot
Base Ammunition Depot	*Base Amn Depot*
Ammunition Collecting Centre	Amn Collecting Centre
Reserve Base Ordnance Depot	Res Base Ord Depot
Reserve Base Ammunition Depot	Res Base Amn Depot
Indian Medical Service—	
No 1 (2 etc) Indian Casualty Clearing Station	1 (2 etc) Ind C C S
No 1 (2, etc) Indian Field Ambulance	1 (2 etc) Ind Fd. Amb
No 1 (2 etc) Sanitary Section	1 (2 etc) San Sec

* See footnote on p 202

OTHER ABBREVIATIONS

Full title (1)	Abbreviations * (2)
[illegible] Indian Motor Ambulance [illegible]	I (S etc) Ind M Amb Sec
Royal Air Force—	
No 11 [illegible] 39 60) Bomber squadron R A F	11 (27 39 60) (B) Sqn
No 5 [illegible] 31 Army Co-operation Squadron R A F	5 (20 28, 31) (AC) Sqn
Bomber Transport Flight	(B T) Flt
Acknowledge	Ack
Addressed	Ad Ssd
Administration Administrative	Adm
Advanced dressing station	A D S
Advanced guard	Adv Gd
Air defence	A D
Ammunition	Amn
Ammunition railhead	A R H
Ammunition refilling point	A R P
Animal Transport	A T
Anti aircraft or Army Act	A A
Anti tank	A Tk
Appendix	Appx
Armour piercing	A P
Armoured car	Armd C
Armoured fighting vehicle	A F V
Army book	A B
Army co-operation squadron	A C Sqn
Army Council Instruction	A C I
Army form	A F
Army order	A O
Army routine order	A R O
Army troops	A Tps
Artillery	Arty
Artillery reconnaissance	Arty R.
Assistant Inspector of Armourers	A I A
Battalion	Bn
Battery	Bty
Batteries	Btys
Battery commander	B C
Battery quarter master Serjeant	B Q M S
Battery serjeant major	B S M
Bombardier	Bdr
Bomber (aeroplane)	B
Branch field post office	B F P O
Breech loading	B L
Brigade	Bde
Brigade intelligence officer	B I O
Brigade machine gun officer	B M G O
Brigade Ordnance Warrant Officer	B O W O
Brigadier	Brig
Captain	Capt
Casualty clearing station	C C S
Cavalry	Cav
Cavalry Armoured Car Regiment (Squadron)	Cav Armd C. Regt (Sqn)
Cavalry Brigade Ammunition Unit	Cav B A U
Central wireless station	C W S
Chaplain to the Forces	C F

[illegible]

Full title	Abbreviations* (2)
Royal Artillery—	
[illegible] Indian Mountain Battery R.A.	[illegible]
[illegible] Mountain Battery, R.A., F.F.	[illegible]
[illegible] Mountain Battery R.A., F.F.	[illegible]
Sappers—	
[illegible] Field Company Sappers and Miners	1 (2, etc.) Fd. Coy. S.M.
[illegible] Field Troop, Sappers and Miners	1 (2, etc.) Fd. Tp. S.M.
[illegible] Army Troops Company Sappers and Miners	1 (2, etc.) A. Tps. Coy S.M.
[illegible] Divisional Headquarters Company Sappers and Miners	1 (2, etc.) Div. Coy S.M.
[illegible] Electrical and Mechanical Company	1 (2, etc.) E. & M. Coy Ind
[illegible] Printing Section, Sappers and Miners	1 (2, etc.) Ptg. Sec. S.M.
[illegible] Litho Section Sappers and Miners	1 (2, etc.) Litho Sec. S.M.
[illegible]	Con. Fn
[illegible]	[illegible]
[illegible] Company	[illegible] Fd. Svy. Coy
Base Engineer Park	Base Eng. Park
Advanced Engineer Park	Adv. Eng. Park
Indian Signal Corps—	
1st (2nd, etc.) Indian Cavalry Brigade Signal Troop	Sigs. 1 (2, etc.) Ind. Cav. Bde
[illegible]	[illegible] Coy
[illegible]	Coy
[illegible]	
(Mule)	
No. 1 (2nd, etc.) Animal Transport Company (Camel)	1 (2, etc.) A.T. Coy. (C)
Indian Army Ordnance Corps—	
Railhead Ammunition Depot	R. Amn. Depot
Advanced Base Ammunition Depot	Adv. Base Amn. Depot
Advanced Base Ordnance Depot	Adv. Base Ord. Depot
Base Ordnance Depot	Base Ord. Depot
Base Ammunition Depot	Base Amn. Depot
Ammunition Collecting Centre	Amn. Collecting Centre
Reserve Base Ordnance Depot	Res. Base Ord. Depot
Reserve Base Ammunition Depot	Res. Base Amn. Depot
Indian Medical Service—	
[illegible] etc.) Indian Casualty Clearing [illegible]	1 (2, etc.) Ind. C.C.S.
No. 1 (2, etc.) Indian Field Ambulance	1 (2, etc.) Ind. Fd. Amb.
No. 1 (2, etc.) Sanitary Section	1 (2, etc.) San. Sec.

* See footnote on p. [illegible]

7 OTHER ABBREVIATIONS

Full title (1)	Abbreviations * (2)
No 1 etc) Indian Motor Ambulance Section	1 (2 etc) Ind M Amb Sec
Royal Air Force—	
No 11 (27 39 60) Bomber Squadron R A F	11 (27 39 60) (B) Sqn
No 5 (20 28 31) Army Co-operation Squadron R. A F	5 (20 28, 31) (AC) Sqn
Bomber Transport Flight	(B T) Flt
Acknowledge	Ack
Addressed	Addsd
Administration or Administrative	Adm
Advanced dressing station	A D S
Advanced guard	Adv Gd
Air defence	A D
Ammunition	Amn
Ammunition railhead	A R H
Ammunition refilling point	A R P
Animal Transport	A T
Anti aircraft or Army Act	A A
Anti tank	A Tk.
Appendix	Appx
Armour piercing	A P
Armoured car	Armd C
Armoured fighting vehicle	A F V
Army book	A B
Army co-operation squadron	A C Sqn
Army Council Instruction	A C I
Army form	A F
Army order	A O
Army routine order	A R O
Army troops	A Tps
Artillery	Arty
Artillery reconnaissance	Arty R.
Assistant Inspector of Armourers	A I.A
Battalion	Bn
Battery	Bty
Batteries	Btys
Battery commander	B C
Battery quarter master Serjeant	B.Q M S
Battery serjeant major	B S.M.
Bombardier	Bdr
Bomber (aeroplane)	B
Branch field post office	B F P O
Breech loading	B L.
Brigade	Bde
Brigade intelligence officer	B I O
Brigade machine gun officer	B M G O
Brigade Ordnance Warrant Officer	B O W O
Brigadier	Brig
Captain	Capt
Casualty clearing station	C C S
Cavalry	Cav
Cavalry Armoured Car Regiment (Squadron)	Cav Armd C r (Sqn)
Cavalry Brigade Ammunition Unit	Cav B A. U
Central wireless station	C W S
Chaplain to the Forces	C F

7 Other Abbreviations—*contd*

Full title (1)	Abbreviations* ( )
Chief Ordnance Mechanical Engineer	C O M E
Chief Ordnance Officer	C O O
Close reconnaissance	Cl R.
Colonel	Col
Column	Coln
Commandant	Comdt
Commander	Comdr
Commanding	Comdg
Commanding officer	C O
Communication	Comm
Company	Coy
Companies	Coys
Company quarter master serjeant	C Q M S
Company serjeant major	C S M
Controller of Canteen Service	C Can
Corporal	Cpl
Corps routine order	C.R O
Corps troops *or* Communication trench	C T
Counter battery or Confinement to barracks	C B
Counter battery officer	C B O
Delivery point	D P
Despatch rider	D R
Despatch rider letter service	D P L S.
Detachment	Det.
Detention	Detn.
	D F
	D L S
	D G M S
	D G Tn
	D Docks
	D G R
	D Hgs.
	D H
	D I W T
	D Lab
	D I Ry
	D M S
	D O S
	D Post
	D P S S
	D Ry
	D Remounts.
	D S T
	D Svy
	D V S
	D of W
	Dis R.
District court-martial	Dist
Divisional Ammunition Unit	D C M
Divisional *or* Division	D.A.U
Divisional routine orders	Div
Dragoon	D R O
Drummer or drummer	Dgn.
Echelon	Dr
Embarkation medical officer	Ech.
Embarkation staff officer	E M.O
	E S O

*

7 Other Abbreviations—*contd*

Full title (1)	Abbreviations* (2)
Emergency operations	E O
Establishment	Est
Exclusive	Excl
Farrier	Far
Field ambulance	Fd Amb
Field battery	Fd Bty
Field brigade	Fd Bde
Field company	Fd Coy
Field general court martial	F G C M
Field Hygiene Section	Fd Hyg Sec
Field marshal	F M
Field officer	F O
Field Service	F S
Field Service Manual	F S M
Field Service Regulations	F S R
Field squadron	Fd Sqn
Fighter (aeroplane)	F
Financial adviser	F A
Flash spotting	F Sp
Flight	Flt
Forward observation officer	F O O
Four wheel drive	F W D
Fusilier	Fus
General	Gen
General court-martial	G C M
General Officer Commanding (in Chief)	G O C (in C)
General routine order	G R O
General service *or* General Staff	G S
Group	Gp
Guard	Gd
Guardsman	Gdsm
Gunner	Gr
Headquarters	H Q
Heavy	Hy
High explosive *or* Horizontal equivalent	H E
Horse drawn	H D
Horsed transport	H T
Hospital	Hosp
Hours	Hrs
Howitzer	How
In charge of	I c
Inclusive	Incl
Indian Army	I A
Infantry	Inf
Initial water point	I W P
Inspecting or finance officer	I O O
Intelligence liaison officer	I I O
Intelligence officer	I O
Junction	Junc
Lance-bombardier	L/Bdr
Lance-corporal	L/Cpl
Lance-serjeant	L/Sjt.
Lewis gun	L G
Lieutenant	Lieut.
Lieutenant colonel	Lt Col
Lieutenant-general	Lt.-Gen
Light automatic	L.A.

7 OTHER ABBREVIATIONS—*contd*

Full title (1)	Abbreviations * (2)
Light draught	L D
Limbered general service wagon	L.G.S. Wagon
Line or lines of communication	L. of C.
Line telegraphy	L/T
Machine gun	M G
Main dressing station	M.D.S
Major	Maj
Major general	Maj. Gen
Mechanical transport	M T
Mechanized	Mech.
Medical officer	M O
Medium	Med
Meeting point or Military Police	M.P
Miles per hour	m p h.
Military Foot Police	M.F.P
Military foreman of works	M F W
Military forwarding officer	M F O
Military landing officer	M.L O
Military Mounted Police	M M P
Mobile veterinary section	Mob Vet Sec
Mobilization	Mob
Motor ambulance convoy	M A C
Mounted	Mtd.
Muzzle velocity	m v
Non commissioned officer	N C O
Observation post	O P
Officer	Offr
Officer commanding	O C
Officer in charge	O i/c
Officers Training Corps	O T C
Ordnance mechanical engineer	O.M.E.
Ordnance officer	O O
Other ranks	O R
Paymaster	Pmr
Paymaster in Chief	Pmr in-C
Photographic reconnaissance	Ph R
Pioneer	Pnr
Platoon	Pl
Point	Pt
Post office	P O
Pounder	Pr
Principal chaplain	P C
Printing and Stationery Service	P S.S
Private	Pte
Provost-marshal	P.M
Quarter master	Qr Mr
Quarter master serjeant	Q M S
Quick firing	Q F
Radio-telephony	R/T
Railhead ordnance officer	R O O
Railhead supply officer	R Sup O
Railway	Ry
Railway telegraph	Ry Tel
Railway Transport Officer	R T O
Reconnaissance	Recce
Reference	Ref
Regiment	Regt

OTHER ABBREVIATIONS—*contd*

Full title (1)	Abbreviations* (2)
Regimental aid post	R.A P
Regimental Intelligence officer	R I O
Regimental serjeant-major	R.S.M
Regimental quarter master serjeant	R Q M S
Rendezvous	R V
Repeated	Rptd
Representative	Rep
Representative fraction *or* Range-finder	R F
Rifleman	Rfn
Rounds per gun per minute	r p g p m
Routine order	R O
Royal Warrant for pay and promotion	R W
Refilling point *or* Rules or procedure	R P
Sapper	Sp
Section	Sec
Senior Chaplain to the Forces	S C F
Senior supply officer	S Sup O
Serjeant	Sjt
Serjeant major	S M
Short magazine Lee Enfield (rifle)	S M L E
Shrapnel	S rap
Signal	Sl
Signal master	Sig Mr
Signalman	Sigmn
Signals	S gs
Single-seater fighter	S S F
Small arm ammunition	S A A
Special despatch rider	S D R
Sound ranging	S Rg
Squadron	Sqn
Squadron artillery officer	S A O
Squadron leader	Sqn. Ldr
Squadron quarter master-serjeant	Sqn Q M S
Squadron serjeant major	Sqn S M
Staff officer	S O
Staff quarter master-serjeant	S Q M S
Staff-serjeant	S Sjt
Staff serjeant-major	S S M
Starting point	S t
Station	Stn
Supply officer	Sup O
Supply railhead	S R H
Supply refilling point	S R P
Territorial Army	T A
Tractor drawn	T D
Transport	Tpt
Transport officer	T O
Troop	Tp
Trooper	Tpr
Trumpeter	Tptr
Vertical interval	V I
Veterinary evacuating station	V E S
Veterinary officer	V O
Visual telegraphy	V/T
Walking wounded collecting post	W W C P

7 OTHER ABBREVIATIONS—*concld*

Full title (1)	Abbreviations* (2)
War establishment	W E
Wing artillery officer	W A O
Wireless telegraphy	W/T

* See footnote on page 292

† The titles of Assistant and Deputy Assistant Director Generals and Directors of the various services are abbreviated as follows

A D G Tn. D.A D G Tn A D M S D A D M S

8 OTHER ABBREVIATIONS SPECIAL TO INDIA

Full title (1)	Abbreviations* (2)
Ambulance Train	Amb Tra n.
Accounts	Accts.
Army Instructions (India)	A I I
Animal Transport	A T
Assistant D rector of Pathology	A D P
Ass stant Surgeon	Asst Sgn
Attached	Attd
Aux liary Force (India)	A F I
Army in India Reserve of Officers	A I R O
Artificer	Artfr
Bearer Unit	Ber U
British Convalescent Depot	B C D
British General Hospital	B G H
British Staging Sect on	B S S
Canteen Contractors Syndicate	C C Synd
Cavalry Field Ambulance	Cav Fd Amb
Controller of Military Accounts	C.M.A.
Daffadar	Dafr
Depot of Medical Stores	D M. Stores (or Depot M Stores)
[illegible]	D D H P
[illegible]	D.D M O W
[illegible]	D C S
[illegible]	D G I.M.S
[illegible]	I C M A.
[illegible]	Fd. Lab
[illegible]	Foll.
Government	Govt
Government of India	G of I
Havildar	Hav
India Army Act	I A A
Ind an Air Force	I A Force
India Army Form	I A I
India Army Order	I A O
Indian Convalescent Depot	I C D
Indian General Hospital	I G H

8. Other Abbreviations Special to India—*contd*

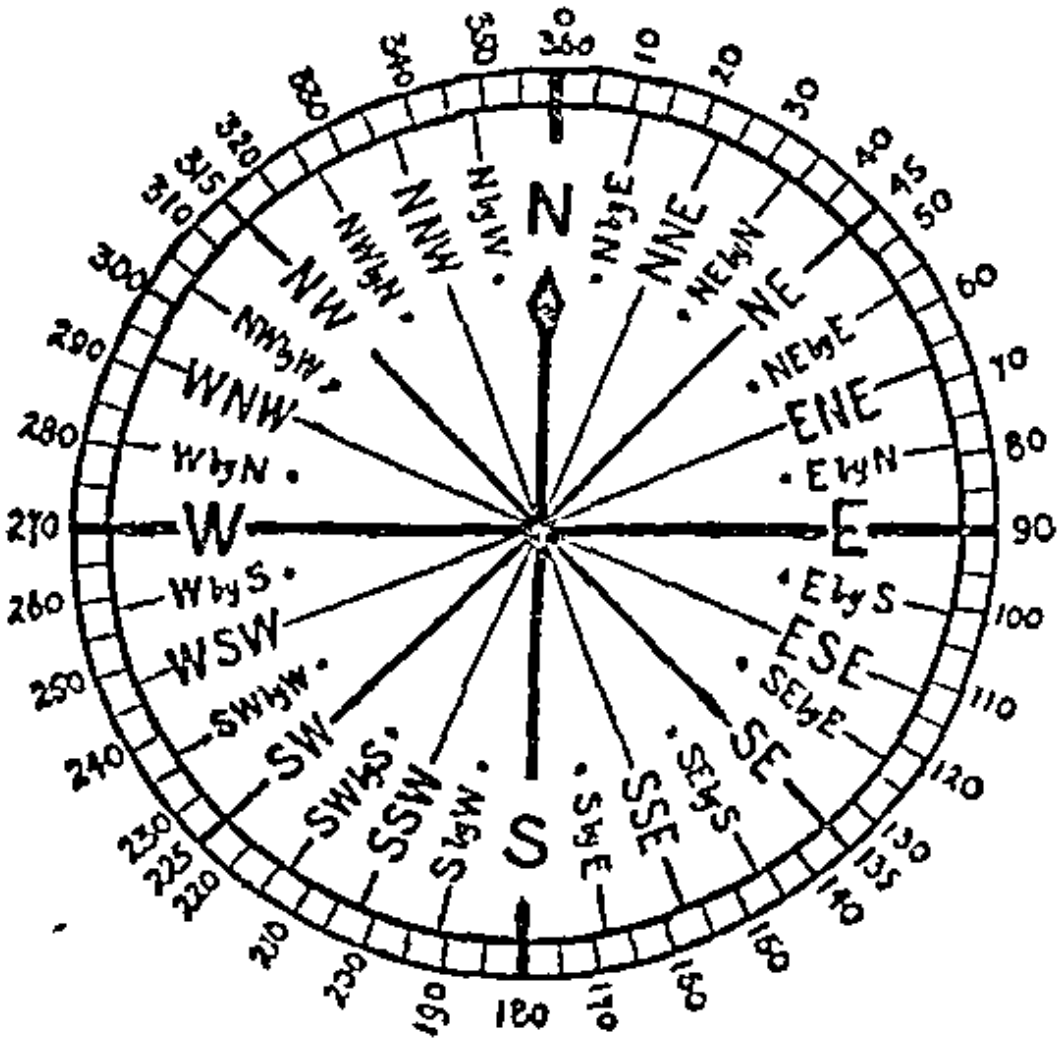
Full title (1)	Abbreviations* (2)
Indian Medical Department	I.M.D
Indian Staging Section	I.S.S
Indian States Forces	I.S.F
Indian Territorial Forces	I.T.F
Inspector General	I.G
Jemadar	Jem
Judge Advocate General	J.A.G
Lance Daffadar	L/Dafr
Lance Naik	L/Nk.
Last Pay Certificate	L.P.C
Managing Director Canteen Contractors Syndicate	M.D.C.C. Synd
Manual of Indian Military Law	M.I.M.L
Maunds	Mds.
Military Accountant General	M.A.G
Military Engineer Services	M.E.S
Military Nursing Service	M.N.S
Mobile X Ray Unit	Mob. X.R.U
Naik	Nk
Officiating	Offg
Public Works Dept	P.W.D
Regulations for the Army in India	R.A.I
Royal Indian Navy	R.I.N
Remittance Transfer Receipt	R.T.R.
Risaldar	Ris.
Risaldar Major	Ris. Maj
Sanitary Section	San. Sec.
Secretary of State for India	S. of S
Sepoy	Sep
Sowar	Swr
Station Staff Officer	S.S.O
Station Supply Officer	S. Sup. O
Subadar	Sub
Subadar Major	Sub-Maj
Sub-assistant Surgeon	S.A.S
Summary General Court Martial	S.G.C.M.
Superintendent	Supdt.
Supply and Transport	S. & T
Survey	Svy
Training Battalion	Trabat
Unattached List	U.L.
X Ray Unit	X.R.U

* See footnote on p. 202.
† See footnote on p. 301.

APPENDIX II.

Plate xxxviii.

POINTS OF THE COMPASS.



APPENDIX III

MAGNETIC VARIATION, 1934

India

Allahabad	0	20	West.
Bangalore	2	50′	,,
Bombay	0	20	,,
Calicut	2	20′	,,
Calcutta	1	20′	,,
Chitral	3	20′	East
Delhi	0	40	,,
Dharamsala	1	40′	,,
Dera Ismail Khan	2	10′	,,
Jhansi	0	30	West.
Jubbulpore	0	40′	,,
Lahore	1	40′	East
Madras	2	50	West
Peshawar	2	40	East
Quetta	2	10′	,,
Rawalpindi	2	20	,,
Simla	1	20′	,,
Shillong	1	10	West
Vizagapatam	2	00	,,

Burma

Rangoon	1	20	West
Mandalay	1	30	,,
Lashio	1	20	,,

Afghanistan

Kabul	3	10	East
Kandahar	2	30′	,,

Persia

Bandar Abbas	2	30	East
Bushire	3	00	,,
Duzdap	2	40′	,,

Iraq

Basrah	3	10	East
Baghdad	3	30	,,
Mosul	3	50	,,
Aden	0	20′	West
Shanghai	3	30	,,
Singapore	0	40	East

APPENDIX IV

DATES OF FULL MOON PESHAWAR, 1934-1939

Month	1934	1935	1936	1937	1938	1939
January	1, 30	30	7	26	16	5
February		18	5	25	14	4
March	1, 31	18	8	27	16	3
April	29	16	7	26	15	2
May	28	16	6	25	14	1, 31
June	27	14	5	24	13	30
July	26	13	4	23	12	29
August	25	12	2	21	11	28
September	23	10	1, 30	20	9	26
October	22	9	29	19	9	26
November	21	8	28	18	7	4
December	21	8	28	17	7	24

ES

between 60° north and 40° south the times for intermediate dates

10° S		20° S		30° S		40° S		Latitude
Rise h.m.	Set h.m	Rise h.m	Set h.m	Rise h.m	Set h.m.	Rise h.m.	Set h.m	
(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
42	18 25	05-24	18 43	05-02	19 05	04 34	19 33	Jan. 1
51	18 29	05 34	18 46	05 14	19-05	04 50	19 30	„ 16
58	18 30	05-44	18 43	05 28	18 59	05-08	19 19	Feb 1
-02	18 27	05 52	18 37	05 40	18 48	05 28	19 03	„ 16
04	18 21	05 58	18 27	05 51	18 33	05 42	18 42	Mar 1
-04	18 14	06 03	18 15	06 01	18 17	05 58	18 19	„ 16
04	18-04	06-08	18 01	06 11	17 57	06 16	17-53	Apr 1
-04	17 56	06 11	17 49	06 19	17 40	06 29	17 30	„ 16
-04	17 49	06 15	17 38	06 38	17 25	06 44	17 03	May 1
-06	17 46	06 21	17 31	06 38	17 14	06 58	16 54	„ 16
-11	17 45	06 28	17 28	06 48	17 08	07 12	16 43	June 1
-14	17 46	06 32	17 28	06 54	17 07	07 20	16 40	„ 16
-18	17 51	06 36	17 32	06 57	17 11	07 23	16 45	July 1
-18	17 54	06 35	17 38	06 55	17 19	07 18	16 55	„ 16
16	17 57	06 30	17 43	06-45	17 28	07 05	17 09	Aug 1
11	17 58	06 21	17 48	06 33	17 36	06 47	17 22	„ 16
03	17 57	06 09	17 51	06 16	17 45	06 24	17 36	Sept 1
54	17 57	05 56	17 55	05 58	17 54	06 00	17 51	„ 16
45	17 56	05 42	17 58	05 40	18 01	05 36	18 05	Oct 1
36	17 55	05 29	18 03	05 21	18 11	05 11	18 21	„ 16
30	17 57	05 18	18 09	05 05	18 22	04 49	18 38	Nov 1
28	18 02	05 13	18 17	04 56	18 34	04 35	18 56	„ 16
30	18 09	05 12	18 27	04 52	18 47	04 26	19 13	Dec. 1
34	18 16	05 15	18 35	04 53	18 57	04 25	19 25	16

APPENDIX VI.

WEIGHTS, MEASURES, THERMOMETER, MONEYS, ETC.

1 The following tables contain information regarding English and foreign weights and measures, and the coinage of foreign countries, etc —

English Weights and Measures

2 *Linear measure*—

	Ins	Ft.	Yds	Pls.	Ch.	Fs
Foot	12	1				
Yard	36	3	1			
Rod pole or perch	198	16½	5½	1		
Chain	792	66	22	4	1	
Furlong	7 920	660	220	40	10	1
Mile	63 360	5 280	1 760	320	80	8

[illegible]

The following is the length in geographical miles of 1 degree of longitude [illegible] N or S 66 832, at [illegible] or S, 34 676

[illegible]

	Ins	Ft	Yds	Pls	Ch.	R
Square foot	144	1				
Square yard	1 296	9	1			
Rod pole or perch	39,204	272¼	30¼	1		
Square chain	627 264	4 356	484	16	1	
Rood	1 568 160	10 890	1 210	40	2½	
Acre	6 272 640	43,560	4,840	160	10	4

A square mile contains 640 acres = 2 560 roods = 6 400 chains = 102 400 rods, poles or perches = 3 097 600 square yards

N B—The term square feet must not be confounded with feet square A piece of cloth said to measure 6 square feet consists of 6 squares of a foot each, but a piece said to measure 6 feet square would be 6 feet along each side, and comprise 36 squares of a foot each

5 *Cubic measure*—

1,728 cubic inches	1 cubic foot
27 cubic feet	1 cubic yard
42 cubic feet timber	1 shipping ton
108 cubic feet	1 stack of wood
128 cubic feet	1 cord of wood

APPENDIX VI

WEIGHTS, MEASURES THERMOMETER, MONEYS, ETC

1 The following tables contain information regarding English and foreign weights and measures and the coinage of foreign countries etc —

English Weights and Measures

2 *Linear measure*—

	Ins	Ft	Yds	Pls.	Ch	Fs
Foot	12	1				
Yard	36	3	1			
Rod pole or perch	198	16½	5½	1		
Chain	792	66	22	4	1	
Furlong	7 920	660	220	40	10	1
Mile	63 360	5 280	1 760	320	80	8

3 *Particular measures of length*—
A fathom = 6 feet
A cable s length ⅒ nautical mile 20 7 yards
A degree of lat tude varies from 68 7 statute miles at the Equator to 69 41 at the Pole

	Ins	Ft	Yds	Pls	Ch.	R
Square foot	144	1				
Square yard	1 296	9	1			
Rod pole or perch	39 204	272½	30¼	1		
Square chain	6 272	4 356	484	16	1	
Rood	1 568 160	10 890	1 210	40	2½	
Acre	6 272 640	43 560	4 840	160	10	4

1 728 cubic inches
27 cub c feet
42 cubic feet timber
108 cubic feet

1 cubic foot.
1 cubic yard
1 shipping ton
1 stack of

APPENDIX VI

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1 The following tables contain information regarding English and foreign weights and measures and the coinage of foreign countries etc —

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	Ins	Ft	Yds	Pls.	Ch	Fs
Foot	12	1				
Yard	36	3	1			
Rod pole or perch	198	16½	5½	1		
Chain	792	66	22	4	1	
Furlong	7 920	660	220	40	10	1
Mile	63 360	5 280	1 760	320	80	8

3 *Part of* [illegible]

The following is the length in geographical miles of 1 degree of longitude [illegible] or 5 66 832 at [illegible] or 8 34 6 6

	Ins	Ft	Yds	Pls	Ch.	R
Square foot	144	1				
Square yard	1 296	9	1			
Rod pole or perch	39 204	272¼	30¼	1		
Square chain	627 264	4 356	484	16	1	
Rood	1 568 160	10 890	1 210	40	2½	
Acre	6 272 640	43 560	4 840	160	10	4

[illegible]

1 728 cubic inches	1 cubic foot
27 cubic feet	1 cubic yard
42 cubic feet timber	1 shipping ton.
108 cubic feet	1 stack of
128 cubic feet	1 cord of

6 *Liquid measure*—

	Gal	Qts	Pt
4 gills	—	—	1
Quart	—	1	2
Gallon	1	4	8
Firkin	9	36	
Kilderkin	18	72	144
Barrel	36	144	288
Hogshead of ale	54	216	432
Puncheon	72	288	576
Butt of ale	108	432	864

7 *Dry measure*—

4 gills	1 pint.
2 pints	1 quart.
4 quarts	1 gallon
2 gallons	1 peck
4 pecks	1 bushel
8 bushels (2 sacks)	1 quarter
36 bushels	1 chaldron

Measures of Weight

8 *Avoirdupois weight*—

27½ grains	=1 drachm =27 34375 grains.
16 drachms	=1 ounce =437 5
16 ounces	=1 pound =7 000
14 pounds	=1 *stone*
28 pounds	=1 *quarter (qr)*
4 quarters	=1 hundredweight (cwt)
20 cwts	=1 ton

This weight is used in almost all commercial transactions and common dealings

9 *Troy weight*—

24 grains	=1 pennyweight
20 pennyweights	=1 ounce
12 ounces	=1 lb

10 *Apothecaries weight*—

20 grains	=1 scruple
3 scruples	=1 drachm (drm.)
8 drachms	=1 oz

11 *Apothecaries fluid measure*—

60 minims (drops)	=1 fluid drachm
8 drachms	=1 oz
20 ounces	=1 pint

Useful weights and measures —1 sovereign =2 drams 1 half-crown 2½ [illegible] table- [illegible] these [illegible]

old hay	= 5 [illegible]
new hay	=56
	=60

[illegible] 36 trusses =1 [illegible] 11 cwts 2 qrs 8 lbs old hay 18 cwts new hay 19 cwts 1 qr 4 lbs

13 *Weight of coal, wood etc* —

Anthracite a cubic yard solid	=2 160 lbs
Bituminous a cubic yard solid	=2 025 ,,
Cannel a cubic yard solid	=1 400 ,,
Coal stored in the usual way, solid	=2 160 ,,
A cubic foot fresh water	weighs 62½ lbs
salt water	,, 63½ ,,
Timber ash	,, 49 ,,
beech	43 ,,
birch	,, 44 ,,
cork	15 ,,
elm	,, 36 ,,
pine	41 ,,
oak	,, 59 ,,
clay	,, 125 ,,
loose earth	,, 95 ,,
A cubic yard compressed hay	,, about 225 lbs
hay in stack	,, ,, 126 ,,
compressed straw	,, ,, 145 ,,
straw in stack	,, ,, 90 ,,
of grain	,, ,, 20 bushels

INDIAN MEASURES, WEIGHTS AND CURRENCY

14 *Linear measure*—

[illegible] miles, yards, [illegible] this varies [illegible] any distance [illegible]

15 *Land Measure*—

The most common unit of land measure is the bigha but this varies in different provinces, its approximate area is as follows —

Bengal	20 cottahs=1 bigha=⅓ acre
United Provinces	20 biswahs=1 bigha=⅓ acre
Punjab	*2 kanals=1 bigha=⅙ acre*

16 *Measures of Weight*—

For transport purposes in the Army the following weights are standard —

1 maund	=40 seers=80 lbs

On most Railways in India the standard is as follows —

1 maund	=40 seers=82 29 lbs

The official standard table is as follows —

8 Ruttees	=1 Masha
12 Mashas	=1 Tola
5 Tolas	=1 chittak
16 chittaks	=1 seer=2 057 lbs.
40 seers	=1 maund=82 29 lbs

There are also the "Factory" and "Bazaar" maunds which are both different from any of the above, and in Madras the maund weighs 25 lbs.

17 *Currency*—

3 Pies	=1 Pice
12 Pies	=1 anna.
16 annas	=1 Rupee
1 gold mohur	=16 Rupe

A lakh of rupees is 100 000 rupees (usually written Rs 1 00
A crore of rupees is 100 lakhs, *i e*, 10 millions—1 ar of ex
=one shillin six pence.

FOREIGN WEIGHTS AND MEASURES

1 *The Metric System used in—*

rgentine Republic, Austria, Belgium, Bolivia, Brazil, Bulgaria, Chile, Colombia, Costa Rica, Czechoslovakia, Denmark, Ecuador, France, Germany, Greece, Haiti, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Rumania, San Domingo, Yugoslavia, Soviet Russia, Spain, Switzerland, Sweden, Turkey, United States (partially), Venezuela.

4 *Linear measure—*

Imperial		*Metric*	
ch	= 4 [illegible] metres	1 millimetre	= 0·039 in
oot	= 0·30[illegible] metre	1 centimetre (10 mms.)	= 0·394 in
ard	= 0·9144 metre	1 decimetre (10 cms.)	= 3·93[illegible] in
ile	= 1·6[illegible] kilometres	1 metre	= 39·370 in 3·281 ft 1·093 yds
		1 kilometre	= 0·621 mile

5 *Square measure—*

q. in.	= 6·451 sq. centimetres	1 sq. centimetre	= 0·1[illegible] sq. in.
q. yd.	= 0·836 sq. metre	1 sq. metre	= 10·764 sq. ft. 1·196 sq. yds.

6 *Cubic measure—*

cub. in.	= 16·38[illegible] cub. centimetres	1 cub. centimetre	= 0·061 cub. in.
cub. ft.	= 0·0[illegible] cub. metre	1 cub. decimetre	= 61·024 cub. in.
cub. yd.	= 0·76[illegible] cub. metre	1 cub. metre	= 35·315 cub. ft. 1·308 cub. yds.

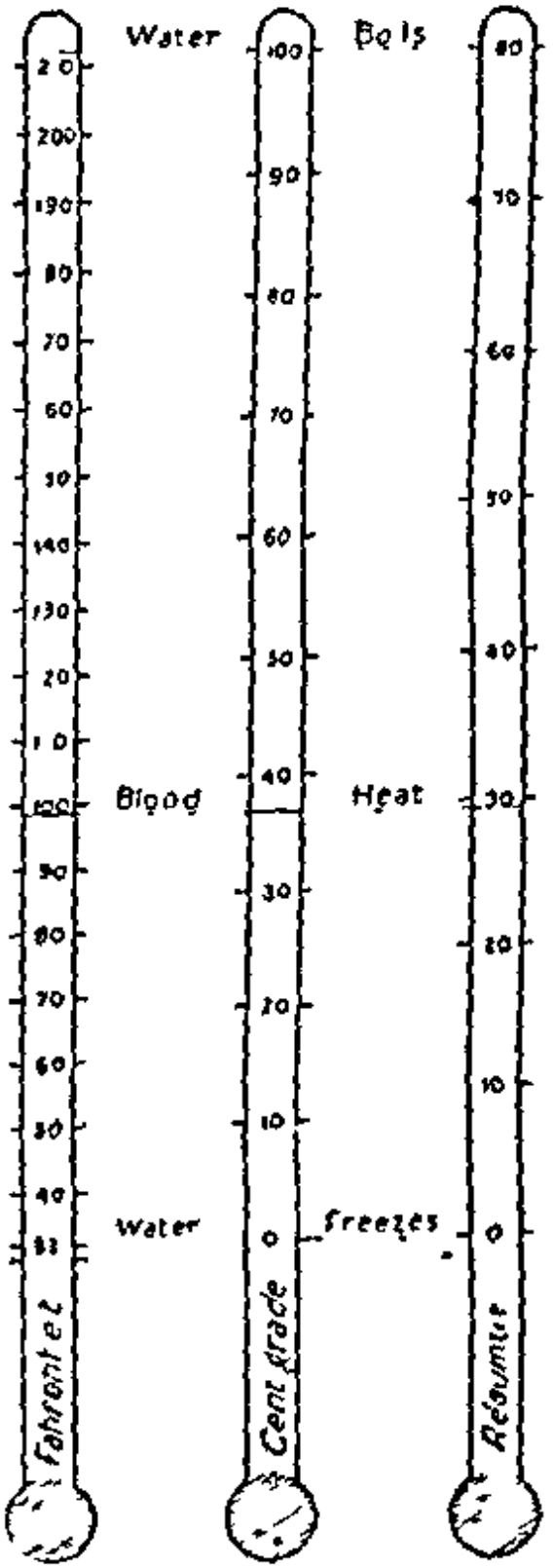
2 *Measures of weight—*

lb.	= 0·454 kilogram	1 kilogram	= 2·204 lbs.
ton	= 1·016 kilograms		

8 *Measures of capacity—*

pint	= 0·568 litre	1 Litre	= 1·7[illegible]9 pints 0·2[illegible] gallon
gallon	= 4·546 litres	1 hectolitre	= 17[illegible]·98 pints 21·997 gallons

29 *Thermometer—* Fig 27



NOTE

To convert Centigrade or Réaumur degrees into Fahrenheit use formulae as follows—

$$F = \frac{9C}{5} + 32$$

$$F = \frac{9R}{4} + 32$$

$$F = C + R + 32$$

$$\frac{F-32}{9} = \frac{C}{5} = \frac{R}{4}$$

Fig 27 shows the respective values of the various thermometers.

APPENDIX VII.

›T OF AUTHORITIES TO WHOM INDENTS SHOULD BE ADDRESSED BY UNITS REQUIRING FOOD, STORES, ETC

Requirements.	Where to apply	
	If on L. of C.	If with Field Troops.
nmunition	Nearest Ordnance Ammunition Depot.	Indents not required.*
A. A	Ditto	Ditto *
ınfectants	Nearest Supply Depot	Supply Officer
ngineer Stores	C. R. E.	C. R. E.
xplosives	Nearest Ordnance Ammunition Depot.	Indents not required
orage	Nearest Supply Depot	Supply Officer
uel	Ditto	Ditto
orses Mules and Transport animals	D. D. R. of Army	D. D. R. of Army
ight (Candles Oil)	Nearest Supply Depot	Supply Officer
edical Comforts	Ditto	Ditto
edical Stores	Nearest Hospital	A. D. M. S
Maps	General Staff	General Staff
Men	A. G. s Branch	A. G. s Staff
Money	Nearest Cash Office.	Field Cashier
Oil (Lighting and lubricating)	Nearest Supply Depot	Supply Officer
Ordnance Stores Clothing and Necessaries	Ordnance or clothing Depot on which dependent	D. A. D. O. S. of Div thro the D. O. B. O
Petrol		
Rations		
Stationery		
Veterinary Stores		
Vehicles (M. T.)		
M. T. Spare Parts	M. T. Stores Depot	M. T. Stores Depot.

* Medium and Anti Aircraft Artillery will refill at A. R. P. or Railh A Ammunition Depot.

(n) O Lord support us all the day long of this troublous life, until the shades lengthen and the evening comes, and the busy world is hushed, the fever of life is over and our work is done Then Lord, in Thy mercy grant us safe lodging a holy rest and peace at the last through Jesus Christ our Lord Amen

THE GRACE OF OUR LORD JESUS CHRIST AND THE LOVE OF GOD, AND THE FELLOWSHIP OF THE HOLY GHOST BE WITH US ALL EVERMORE *Amen.*

(In the case of Roman Catholics the form of service prescribed in the Roman Catholic Prayer Book should be used)

APPENDIX VIII

SHORTENED FORM OF SERVICE FOR THE BURIAL OF THE DEAD

I am the resurrection and the life, saith the Lord: he that believeth in me, though he were dead, yet shall he live; and whosoever liveth and believeth in me shall never die. *St John* xi 25-26.

Psalm 23

Dominus regit me

The Lord is my shepherd: therefore can I lack nothing.

He shall feed me in a green pasture: and lead me forth beside the waters [illegible]

[illegible]

¶ *Then, while the earth shall be cast upon the Body by some standing by, he who conducts the burial service shall say.*

FORASMUCH AS [illegible] HATH [illegible] THE LIFE WE THEREFORE COMMIT HIS [illegible] TO THE [illegible] THAT IT MAY [illegible]

[illegible]

OUR FATHER, WHICH ART IN HEAVEN, HALLOWED BE THY NAME. THY KINGDOM COME. THY WILL BE DONE, IN EARTH AS IT IS IN HEAVEN. GIVE US THIS DAY OUR DAILY BREAD. AND FORGIVE US OUR TRESPASSES, AS WE FORGIVE THEM THAT TRESPASS AGAINST US. AND LEAD US NOT INTO TEMPTATION; BUT DELIVER US FROM EVIL. AMEN.

[illegible]

[illegible] in whose embrace [illegible] are living, we beseech Thee for him or them [illegible] Thou knowest. [illegible] Grant him [illegible] rest, peace and refreshment, joy and consolation in the ample folds of Thy great love, through Jesus Christ our Lord. Amen.

(n) O Lord, support us all the day long of this troublous life, until the shades lengthen and the evening comes, and the busy world is hushed, the fever of life is over and our work is done Then, Lord, in Thy mercy grant us safe lodging a holy rest and peace at the last, through Jesus Christ our Lord Amen

THE GRACE OF OUR LORD JESUS CHRIST, AND THE LOVE OF GOD, AND THE FELLOWSHIP OF THE HOLY GHOST BE WITH US ALL EVERMORE *Amen.*

(In the case of Roman Catholics the form of service prescribed in the Roman Catholic Prayer Book should be used)

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